AUTOMIZER™

MAINTENANCE MANUAL



Labrie Enviroquip Group

AUTOMIZER™

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March 2016

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Introduction

About this Manual

This manual is designed to help qualified maintenance personnel repair, service and maintain the AUTOMIZER™.

What You Will Find in this Manual

This manual outlines maintenance procedures related to the lifting arm, body and packer components.

Topics not Included in this Manual

Maintenance of the chassis

This is dealt with in the chassis manufacturer's service manual.

Cameras and backing-accident prevention systems

For these options, refer to the appropriate manufacturer's service manual.

Operating the AUTOMIZER™

For procedures related to the operation of the AUTOMIZER™, please refer to the Operator's Manual.

Parts and assemblies

For parts and assemblies of the AUTOMIZER™, and their respective part number for ordering purposes, please refer to the AUTOMIZER™ Parts Manual.

About the Schematics

For schematics of all the body parts, refer to the AUTOMIZER™ Parts Manual;

For electrical schematics, refer to the schematics provided with your AUTOMIZER™ unit;

For pneumatic and hydraulic schematics, refer to the schematics provided with your AUTOMIZER™ unit.

NOTE: A number of system schematics are included in this manual.

About the illustrations in this manual

Because Labrie Enviroquip Group is constantly updating its products, illustrations used in this manual may differ from those of the actual product and accessories, depending on the model or options that come with your vehicle.

Introducing the AUTOMIZER™

The AUTOMIZER™ is a straight-frame, side-loading vehicle, manufactured to the highest standards, and designed to collect residential and commercial refuse and recycling materials. It is the ideal choice for those who need reliability and quick route times built into one solid package. Thanks to its fully automated design and its large hopper area, the AUTOMIZER™ helps to keep overhead down allowing for more time spent picking up and less time dumping.

The AUTOMIZER™ has been developed based on years of experience and a wise choice of components. Everything has been foreseen to achieve excellent reliability while keeping construction simple yet robust.

The AUTOMIZER™ features a strong, light-weight body with a reliable loading arm called the RIGHT-HAND™ arm. This arm can reach positions of up to 12 feet from the hopper and lift up to 1,000 pounds fully extended. The RIGHT-HAND™ arm is easy to operate with an electric over hydraulic joystick control, and the Zero-Grab low swing-out makes it easy to collect refuse in narrow spaces.

Multiplexed System

Labrie has equipped your AUTOMIZER™ unit with a CAN bus-based multiplexed system, which integrates a monitor, a control panel, a joystick, and a set of electronic controllers. This whole system has been designed to help you operate your unit in an efficient and easy way. Labrie's multiplexed system is reliable and safe and it requires less wiring harnesses to operate. It can also monitor various function status of the body and display warning and caution messages.

Through its monitor (see Figure 1-1), Labrie's multiplexed system informs you of any malfunctions that may occur during the operation of the truck. Various caution and warning messages can be displayed on the monitor, depending on the seriousness of the situation. Yellow-highlighted messages indicate that caution should be used while red-highlighted messages indicate a warning situation that must be dealt with quickly.

Figure 1-1 Monitor



NOTE: Maintenance personnel as well as in-the-field technicians who encounter any problems with the multiplexed system should refer to the *Multiplex Diagnostic Manual* (part# 153143) for troubleshooting information and guidelines.

Key Features

The AUTOMIZER™, with its advanced design, delivers a lower total vehicle weight and allows for a higher packing capacity. This translates into greater flexibility and a lower Total Cost of Ownership (TCO) for our customers.

Key features of the AUTOMIZER™:

- Environmental benefits
- Light weight, high compaction, fast cycle times
- Reliable electronic monitoring system
- Strongly built automated lifting arm
- Increased fuel efficiency and decreased fuel consumption
- Low maintenance
- Low profile

Warning

Your AUTOMIZER™ unit MUST BE COMPLETELY LUBRICATED before its first use.

Initial lubrication carried out by Labrie Enviroquip Group is sufficient for production and transport purposes ONLY.

Important Notice about the Warranty

Do not forget to complete the Owner Registration Form and send it to Labrie Enviroquip Group. Make sure to indicate the date the truck is placed in service ("In-Service Date"). This date will be used to start the warranty period. Otherwise, the date of delivery from the factory will be used instead.

A Word about Safety

With your safety in mind, we would like to remind you that ONLY QUALIFIED PERSONNEL should service the hydraulic, electrical, and pneumatic systems on your side loader. In addition, they should also be fully knowledgeable of the operation of this unit. Please read the *Operator's Manual* carefully prior to attempting any maintenance work on your AUTOMIZER™ unit.

Parts

Labrie refuse vehicle parts are offered exclusively through Labrie*Plus* and Labrie*Plus* authorized dealers. The quality and reliability of Labrie parts are second to none in the industry.

To Contact Labrie*Plus*

In the U.S.

Address:	1981 W. Snell Road Oshkosh, WI 54904
Toll Free:	1-800-231-2771
Telephone:	1-920-233-2770
General Fax:	1-920-232-2496
Sales Fax:	1-920-232-2498
Parts and warranty:	During business hours, 7:00 AM to 7:00 PM Central Standard Time
Technical Support Service:	Available 24 hours

In Canada

Address:	175A Route Marie-Victorin Levis, QC G7A 2T3
Toll Free:	1-877-831-8250
Telephone:	1-418-831-8250
Service Fax:	1-418-831-1673
Parts Fax:	1-418-831-7561
Parts and warranty:	During business hours, 8:00 AM to 5:00 PM Eastern Standard Time
Technical Support Service:	Available 24 hours
Website:	www.labriegroup.com
E-mail (Sales Dept.):	sales@labriegroup.com
E-mail (Customer Service):	service@labriegroup.com

IMPORTANT: For technical support and parts ordering, the serial number of your vehicle is required. Therefore, Labrie Enviroquip Group recommends you to keep record of the information found on the VIN plate, which is located in the cab.

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Safety

It is mandatory to read the entire *Operator's Manual* before performing any maintenance task on this vehicle.

Conventions

Danger! ⚠	Indicates a hazardous situation which, if not avoided, ***will*** result in serious injury or death.

Warning! ⚠	Indicates a hazardous situation which, if not avoided, ***could*** result in serious injury or death.

Caution! ⚠	Indicates a hazardous situation which, if not avoided, could result in ***minor or moderate injury.***

Basic Safety Notions

The following safety notions are related to the use of the AUTOMIZER™. It is important to point out that the safe use of the vehicle remains the user's responsibility. He must heed all safety notions explained in this manual and on the labels on the vehicle.

Danger! ⚠	Always be aware of the vehicle's surroundings to make sure that no pedestrians, passersby, bystanders, or other people or vehicles are in any way exposed to any danger while you operate the AUTOMIZER™.

Danger!

Never get in the hopper area when the engine is running.
Only authorized personnel may do so following a lockout/tagout procedure (see *Locking Out and Tagging Out the Vehicle* on page 12).

Warning!

With your safety in mind, Labrie Enviroquip Group would like to remind you that ONLY qualified personnel should service the hydraulic, electrical and pneumatic systems on your refuse truck. They must also be knowledgeable about how to operate the truck and installed equipment. Please read the *Operator's Manual* prior to attempting any maintenance or repair on your AUTOMIZER™ vehicle.

Responsibilities

Safety is everybody's responsibility. Both the employer and employees must play their part to ensure safe working conditions in, on, and around the truck and to promote and enforce safe work practices and procedures to prevent injuries and incidents as well as property/equipment damages.

Employer Responsibilities

It is the responsibility of the employer:

- To ensure that the AUTOMIZER™ is operated in accordance with all safety requirements and codes, including all applicable regulations, the Occupational Safety and Health Act (OSHA), and the American National Standards Institute (ANSI).
- To ensure that employees are qualified for operating or maintaining the vehicle and its equipment, and that they all take safety measures before working in, on, and around them.
- To properly maintain all mobile equipment to meet all state/provincial and federal safety standards.
- To supply adequate safe vehicle/equipment instructions and training to employees before assigning them to operate or maintain refuse vehicle/equipment.
- To keep the vehicle maintained and properly adjusted to meet the manufacturer's standards and recommendations. For help or for more information, please contact the manufacturer or any of its authorized representatives.
- To keep records of all vehicle breakdowns and malfunctions, as well as any inspection and maintenance.
- To ensure that all failures or malfunctions that may be affecting the safe use of the vehicle are repaired before the vehicle is put back into operation.
- To meet the appropriate lighting requirements for night-shift work (if permitted).
- To make sure that the backup alarm works properly when the vehicle is in reverse.
- To take necessary measures when any damage or malfunction is reported by an employee.
- To establish and ensure the application of a "lockout/tagout" procedure (see page 12) any time inspection, repair or maintenance is performed on the vehicle, regardless of whether it takes place on the road or in the garage.

Employee Responsibilities

It is the responsibility of the employee:

- To enforce all safety measures to meet the requirements set by the employer.
- To operate the AUTOMIZER™ only after having received instructions and training.
- To immediately report any damage or malfunction to the vehicle or equipment to the employer or supervisor.
- To make sure that no one is near the vehicle before activating any of the controls, and to be prepared to stop at any indication of possible danger.

Do's

- Inspect the body and all systems at the start of each day.
- Make sure that the area is clear of any people or possible obstructions.

IMPORTANT: Be extremely cautious in areas where small children may be present.

- Wear safety glasses and footwear, gloves, and any other safety equipment when loading and packing refuse.
- Make sure that mirrors, windows, lights, and monitor equipment are clean and properly adjusted.
- Check for explosive trash (for example, televisions, paint cans, fluorescent light tubes, etc.).
- Drive carefully when carrying an unevenly distributed load.
- Inspect for overhead hazards (power lines) prior to hoisting the body or using the arm.
- Use the body safety prop when servicing under the body.
- Use the tailgate safety prop before entering the area between the main body and the tailgate.
- Obey all warning and operation stickers.

Don'ts

- Do not operate any vehicle while under the influence of alcohol, narcotics or other intoxicants.
- Do not talk on a cell phone or listen to loud music while driving.
- Do not wear jewelry or loose clothing.
- Do not leave the vehicle before it is brought to a complete stop and the work or parking brake is engaged.
- Do not enter the hopper or main body unless the engine is shut off, the key is removed and there is an out-of-service tag on the steering wheel. Refer to "Locking Out and Tagging Out the Vehicle" on page 12.
- Do not hoist the body if the vehicle is standing on uneven ground.
- Do not back up the vehicle when the body is raised.
- Do not drive with the tailgate fully open unless it is to unload refuse at the landfill.

- Do not use the body safety prop to prop a *loaded* body.

Warning!

Prior to its first use, your AUTOMIZER™ *must be completely lubricated*, as shown on the Lube Chart sticker located on the body curbside, near the hopper.
Initial lubrication carried out by Labrie Enviroquip Group is sufficient for production and transport purposes *only*.

Only qualified personnel should service the hydraulic, electrical, and pneumatic systems of this vehicle. They should also be knowledgeable about the operation of the vehicle.

General Precautions

Danger!

Operators and maintenance personnel must adhere to the following precautions *at all times*. Failure to do so may result in vehicle and/or property damage, personal injury, or even death.

- Read and make sure that you fully understand this manual and all safety decals before performing maintenance on the vehicle. Maintenance personnel must also read and understand the vehicle *Operator's Manual.* In case of doubt, ask a supervisor for clarifications.
- Before every work day, inspect the body, the packing system, and any system that might compromise public and/or operator safety.
- Verify that the accelerator pedal, the steering wheel, mirrors, brakes, and turn signals are in good working order.
- When driving the vehicle, keep both hands on the steering wheel at all times.
- Stop the vehicle completely and put on the parking brake before leaving the driving position.
- When the vehicle is parked, the parking brake *must* be applied.
- Vehicle operators must have a clear view of lifting arm operations at all times. To prevent injury to nearby people, and damage to property and/or to the lifting arm itself, operators must be able to stop arm movement at any time.
- Before activating the lifting arm, operators shall make sure that people and obstructions are far away from the vehicle.
- AUTOMIZER™ vehicles are primarily designed to be operated *by only one operator.* However, if Labrie Enviroquip Group customers choose to operate the vehicle with more than one operator, additional safety items shall be installed *to protect the second operator* from hazardous situations.

IMPORTANT: In such cases, Labrie Enviroquip Group *must be informed* of every and all units that will be operated by more than one operator. Labrie Enviroquip Group will then determine and supply, at the customer's expense, the required safety items. For additional information, please contact Labrie*Plus* at 1-800-231-2771.

- Do not operate this vehicle if there are any signs of damage or incomplete repairs.

- Report any doubts that you might have and any equipment safety service requirements regarding this vehicle to a supervisor.
- When removing nylon locknuts, *always* replace them by new ones.
- For any work (including cleaning and inspection) that has to be done between the body and the chassis, *always* use the body safety prop. Also, the vehicle *must* be on level ground.
- Before opening and closing the tailgate(s) and/or raising the body, make sure that there is no one behind the vehicle.
- Do not get into the hopper compartment or try to repair anything behind the packer when it is moving or when the hydraulic pump is still running. Personnel authorized to get into the hopper *must* first lock out and tag out the vehicle, as required by the employer. For more information, see *Locking Out and Tagging Out the Vehicle* on page 12.
- *Never* stand underneath a raised arm/gripper. Should a hydraulic component break, such as a hydraulic hose, failure to stay away from the arm may result in personal injury or even death.
- *Never, under any circumstances* (maintenance or otherwise), stand underneath a *loaded* body.

Caution!

Maintenance and repairs carried out on this vehicle must only be done by qualified mechanics who are familiar with the equipment.

Welding

Danger!

Remove paint before welding or heating. Do not weld near lines that are pressurized or contain flammable fluids.

Caution!

Disconnect all batteries and electronic modules prior to welding on packer body.

Fire

The employer must inform and train all personnel on the measures that must be taken in case of a vehicle and/or loaded body catching fire.

Anytime a loaded vehicle is *brought inside a garage,* fire extinguishers shall be close at hand.

Danger! Do not perform any repair or maintenance on a vehicle that has not been unloaded.

The employer must also inform employees of an appropriate place to unload the body near the maintenance facility (preferably away from traffic, surface drains, and ditches).

Locking Out and Tagging Out the Vehicle

For any inspection, repair or general maintenance being done on the vehicle, whether on the road or at the shop, it is the employer's responsibility to establish and see to the application of a proper lockout and tagout procedure.

To lock out and tag out your AUTOMIZER™ unit:

1. Park the vehicle on safe, level ground and apply the parking brake (see Figure 2-1).

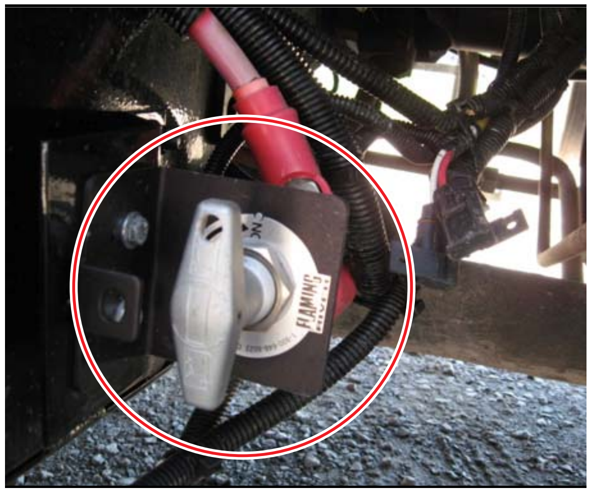
Figure 2-1 Parking brake button



2. Make sure that the body is completely unloaded.
3. Switch off the hydraulic pump.
4. Turn off the engine, remove the key from the ignition, store it in a safe and controlled area (preferably on yourself), and tape over the ignition switch.
5. Turn off and lock the master switch.
6. Chock all wheels.

IMPORTANT: Depending on the chassis model, the battery set of the AUTOMIZER™ may be equipped with a master switch (see Figure 2-2) that must be turned off.

Figure 2-2 Master switch



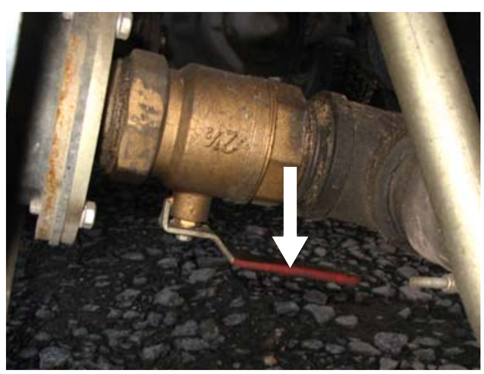
7. Put an "OFF SERVICE" tag on the driver's wheel and on the front windshield.
8. Use safety props to block any system that could move by gravity (open tailgate, raised body, etc.).
9. Drain all air tanks.
10. Verify and inspect any security device and/or mechanism to make sure that there is no bypass and that they are all functional.

Prior to Start Up

Before starting the vehicle:

1. Make sure no system will engage and/or start to operate as you start the engine.
2. Make sure the shut-off valve on the hydraulic tank is fully open before starting the vehicle (see Figure 2-3).

Figure 2-3 Suction line shut-off valve



NOTE: The hydraulic tank model may vary according to the options installed on the vehicle.

Warning!

Failure to fully open the main valve will cause immediate damage to the pump, even if the pump is turned off.

3. Once the engine is started, wait for air pressure to build up to *at least* 70 psi.

Figure 2-4 Air pressure indicator



IMPORTANT: Do not operate or move the vehicle until air pressure has reached 70 psi.

4. Engage the hydraulic system by turning ON the Pump switch on the in-cab control panel (see Figure 2-5).

Figure 2-5 Pump switch



- A green switch means the pump is active.
- A blue switch means the pump is not active.

Shutting Down the Vehicle

If the vehicle has to be stored for an extended period of time, follow the chassis manufacturer shutdown and maintenance requirements.

Also:

1. Park the vehicle on a hard, level surface and apply the parking brake.
2. Make sure that all moving parts are in their home position (tailgate, arm, body, crusher panel, packer, etc.).
3. Turn off, in sequence, the hydraulic pump, the electrical system, the engine and (if installed) the master switch.
4. Drain all air tanks and the water trap.

Figure 2-6 Drain valve on air tank (left) and water trap (right)



Setting the Body Safety Prop

Safety props ensure that heavy body parts will not move inadvertently.

The body safety prop ensures that an ***empty*** body will not lower when you are working underneath it.

Danger!

Always set the body safety prop when performing maintenance underneath a raised body. Failure to do so may result in severe injury, or even death.

Figure 2-7 Body safety prop



To set the body safety prop:

1. Make sure that there is enough clearance above the body to raise it safely.
2. Start the engine.
3. With the Body Up switch on the in-cab control panel, raise the body until the safety prop is free to tilt under it.
4. Release the safety prop using the safety prop handle and position it adequately.

Figure 2-8 Safety prop handle



5. Lower the body until it rests on the safety prop using the Body Down switch on the in-cab control panel.
6. Lock out and tag out the vehicle (see *Locking Out and Tagging Out the Vehicle* on page 12).

You can now work safely underneath the body.

Putting the Body Safety Prop Back in Place

To put the body safety prop back in place:

1. Make sure that there is enough clearance above the body to raise it safely.
2. Start the engine.
3. With the Body Up switch on the in-cab control panel, raise the body until the safety prop can move freely.
4. Put the safety prop back in its place.
5. Lower the body using the Body Down switch on the in-cab control panel.

Setting the Tailgate Safety Prop

The tailgate safety prop is used to support and keep the tailgate open during inspection or maintenance procedures. It is mandatory to set the safety prop every time the tailgate is open for such purposes. Note that Co-Mingle vehicles have two tailgate safety props.

IMPORTANT: Make sure that the body is empty before installing safety props.

Figure 2-9 Tailgate safety prop



Danger! The safety prop shall be set each time the tailgate is opened for inspection and maintenance purposes.

To set the tailgate safety prop:

1. Make sure that the body is empty.
2. Remove the tailgate safety pin (see Figure 2-10).

Figure 2-10 Safety pin (in storage position, left; in locking position, right)



3. Start the engine.
4. Turn on the pump.

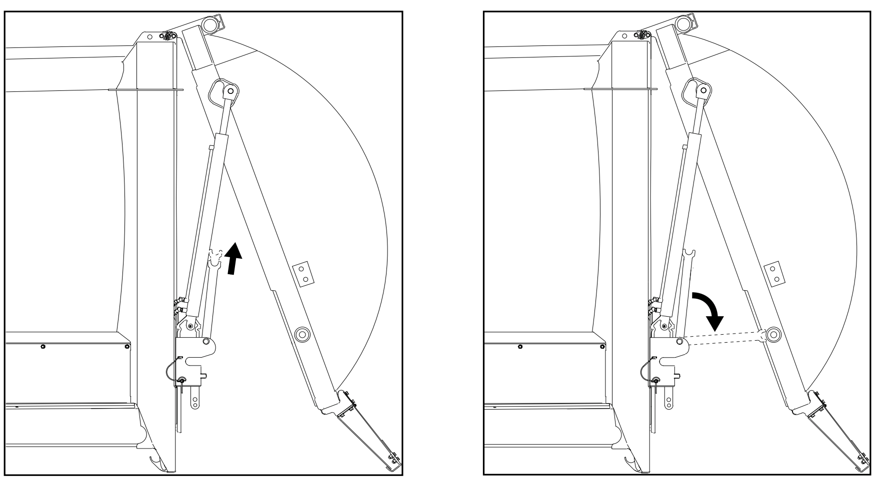
Danger!

Prior to raising the tailgate, make sure that no one is standing behind the vehicle and that the body is empty.

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5. With the Tailgate Up switch on the in-cab control panel, raise the tailgate about 3 feet (enough to raise the safety prop).
6. Pull the safety prop upward and set it down (see Figure 2-11).

Figure 2-11 Pulling the safety prop upward (left) and setting it down (right)



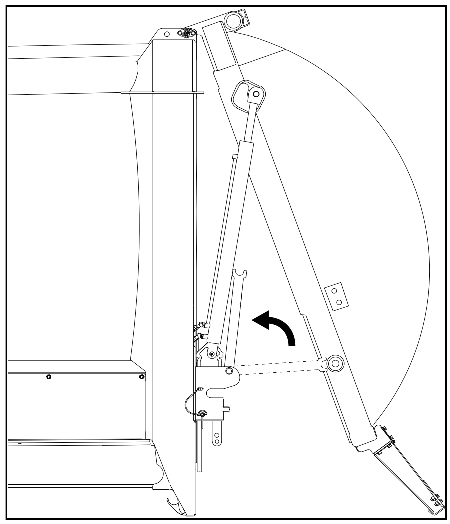
7. Lower the tailgate onto the safety prop using the Tailgate Down switch on the in-cab control panel.

Putting the Tailgate Safety Prop Back in Place

To put the tailgate safety prop back in its home position:

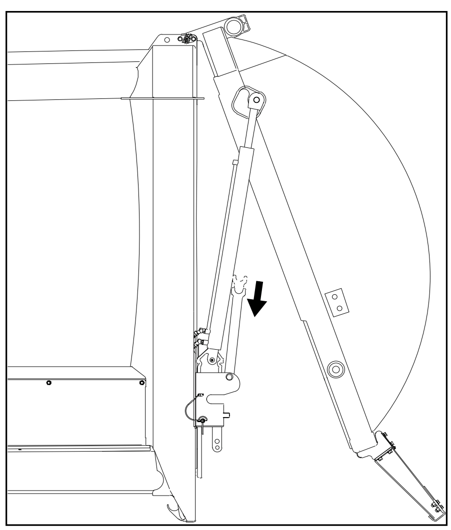
1. Start the engine.
2. Turn on the pump.
3. Raise the tailgate by about 3 feet using the Tailgate Up switch on the in-cab control panel.
4. Raise the tailgate safety prop.

Figure 2-12 Raising the tailgate safety prop



5. Release your grip on the safety prop to set it in its home position.

Figure 2-13 Setting the safety prop in its home position



6. With the Tailgate Down switch on the in-cab control panel, completely close the tailgate. The TAILGATE OPEN light indicator should turn off.

7. Put the safety pin back in place.

3

General Maintenance

Danger!

Always lock out and tag out the vehicle during inspection and maintenance (see *Locking Out and Tagging Out the Vehicle* on page 12).

Cleanliness

Cleanliness is part of safety.

As such:

- Clean all vehicle lights, warning lights and safety stickers so that you and the vehicle surroundings are safe at all times.
- Clean the contact surface between the body and the chassis. Labrie Enviroquip Group recommends cleaning the chassis after every unloading.
- Remove any stacked garbage in the hopper area.
- Make sure that the side step and/or hopper step (if installed) are clean and free of any slippery material.

Danger!

Always use the stepladder to reach the higher parts of the vehicle. Also, do not climb on to the truck roof as it has not been designed to be walked on.

Caution!

Keep the cab floor dry and clean to prevent slipping and falling.

AUTOMIZER™ Preventive Maintenance Chart

Component/System	Task	Daily	Weekly	Monthly	Yearly	Page
Limit/proximity switches	Proper adjustment of all limit/proximity switches is imperative		X			See page 78
	Check and clean area around limit/proximity switches	X				
Packer and accessories	Lubricate the packer and its accessories. See *Lubrication Chart* on side of the vehicle	X				See page 104
Wiring System	Check for damaged harnesses and/or bad connections				X	See page 159
Battery Cables	Ensure cables are not coming in contact with an area that could rub through the insulation			X		
Operator controls	Check for proper operation	X				
Air tanks	Drain air tanks	X				See page 167
Air system	Check for leaks		X			See page 168
	Drain filter	X				
Safety systems	Check for proper operation (tailgate alarm and special devices)		X			See page 77
Automated arm	Check all pivots and mechanism	X				See page 209

Component/System	Task	Daily	Weekly	Monthly	Yearly	Page
Hydraulic system	Check oil level in tank, and refill if necessary	X				See page 137
	Check if the shut-off valve on the hydraulic tank is open	X				see Figure 5-35
	Check ground for overnight leaks	X				
	Check cylinders, pump, control valve and system for leaks. Repair or replace if required		X			See page 157 See page 122 See page 120
	Replace hydraulic filter[a]				Twice a year	See page 154
	Clean strainer and refill				X	See page 153
	Check pressure			X		See page 117
Hopper area	Clean traps on each side	X				See page 25
	Clean dirt under or behind the packer	X				See page 29
Rollers, hydraulic cylinders and cylinder pins, hoses, pipes and connections, wear of floor and hopper sides.	Visually inspect these items	X				
Body and chassis	Check for corrosion			X		
	Keep the contact surfaces clean between the body and the chassis	X				

a. Also replace the return filter after the first 50 hours of operation.

Hopper

The area behind the packer MUST be cleaned out EVERY DAY. The packer will not work properly if waste accumulates in this area; it could cause severe damage to the packer and other related parts. Cleaning the hopper consists of 3 steps:

- Preparing the hopper for clean-up
- Cleaning up the hopper
- Inspecting the hopper after clean-up

Preparing the Hopper for Clean-Up

To prepare the hopper for clean-up:

1. Start the engine and engage the hydraulic pump (see Step 4 on page 14).
2. Using the joystick, extend the automated arm.
3. Close the hopper door.

NOTE: The hopper door *MUST* be closed in order to move the packer.

4. Fully extend the packer (see Figure 3-1), then push the red emergency STOP button (see Figure 3-2).

Figure 3-1 Fully extended packer

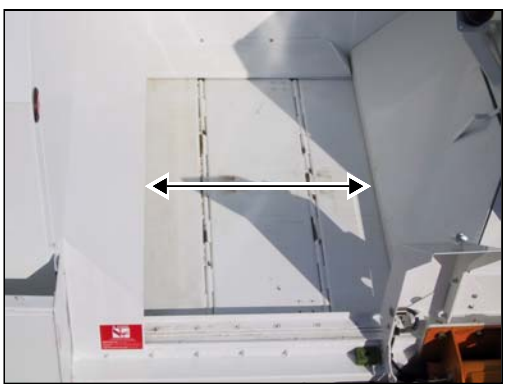


Figure 3-2 Emergency STOP button



5. Turn off the hydraulic pump and stop the engine.
6. Lock out and tag out the vehicle (see *Locking Out and Tagging Out the Vehicle* on page 12).

Cleaning up the Hopper (Standard Units)

NOTE: Packer must be fully extended before applying the following procedure (see *Preparing the Hopper for Clean-Up* on page 24).

Once the hopper has been prepared for clean-up:

1. Open the clean-out traps on each side of the hopper (see Figure 3-3).

Figure 3-3 Clean-out trap



2. Climb inside the hopper using the stepladder.

Figure 3-4 Stepladder

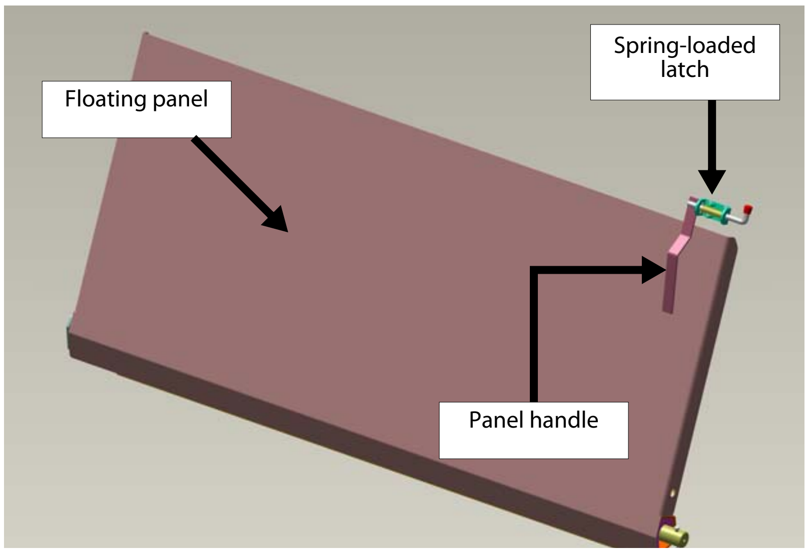


3. Pull out the floating panel to gain access to the area behind the packer (see Figure 3-5). To do so:
   - **3 a.** Pull the spring-loaded latch to the right.
   - **3 b.** Turn the latch handle a quarter of a turn counter-clockwise so that the latch will not spring back to its original position.

3 c. Grab the panel handle and pull the panel towards you.

Caution! When opening or closing the floating panel, keep hands and fingers away from the pinch point area.

Figure 3-5 Floating panel



4. With a scraper or pressurised water, remove all accumulated dirt behind the packer, under the cylinder brackets, and inside side rails (see Figure 3-7).

5. Remove debris through the clean-out traps (see Figure 3-6).

Figure 3-6 Removing debris through the clean-out trap



6. Finish cleaning the area with pressurized water.

7. Once cleaning is complete, close the floating panel. To do so:

7 a. Push on the floating panel to close it.

7 b. Pull the spring-loaded latch to the right and turn the latch handle a quarter of a turn clockwise to release the spring so that the latch can return to its original position.

Caution! When opening or closing the floating panel, keep hands and fingers away from the pinch point area.

Cleaning up the Hopper (Co-Mingle Units)

NOTE: Packer must be fully extended before applying the following procedure (see *Preparing the Hopper for Clean-Up* on page 24).

Once the hopper has been prepared for clean-up:

1. Open the clean-out traps on each side of the hopper (see Figure 3-3).
2. Use the stepladder to climb and reach the front part of the body just behind the cab.

NOTE: On co-mingle units, the floating panel cannot be opened.

3. With a scraper or pressurised water, remove all accumulated dirt behind the packer, under the cylinder brackets, and inside side rails (see Figure 3-7).

Figure 3-7 Area behind the packer



4. Remove debris through the clean-out traps (see Figure 3-6).
5. Finish cleaning the area with pressurized water.

Inspecting the Hopper After Clean-up

Once you are finished cleaning the hopper area, inspect your work:

1. Check the following components for proper working order and/or alignment:
   - Rollers

- Cylinder pins
- Hoses, pipes, connections and cylinders (for leaks, etc.)
- Bolts (for tightness)
- Hopper floor and sidewalls (for excessive wear)

Figure 3-8 Inside the hopper area



2. After inspection, on standard units, put the floating panel back in place (see Figure 3-5).

NOTE: On co-mingle units, the floating panel cannot be opened.

3. Use the stepladder to get down.
4. Retract the stepladder.
5. Start the engine, engage the hydraulic system and fully retract the packer.
6. Retract the automated arm to its original position.

Packer

The AUTOMIZER™ packing system relies on a heavy-duty guiding system and high-strength steel wear plates. Because the packing system is put to such intensive use (1,000 to 3,000 cycles a day), Labrie Enviroquip Group recommends that *operators* perform a visual inspection of the packer and its components every day.

Maintenance personnel *must* perform weekly inspection and maintenance. Greasing all moving parts on a daily basis is very important and proper adjustment of the proximity switches is mandatory, especially on vehicles equipped with a multi-cycle feature. For more information on the lubrication schedule, see *Lubrication* on page 99.

Any problems found on the packing system must be corrected immediately. In case of problem, contact your distributor.

Danger! Always lock out and tag out the vehicle during inspection and maintenance (see *Locking Out and Tagging Out the Vehicle* on page 12).

Preparing the Packer for Inspection

To prepare the packer for inspection:

1. Start the engine and engage the hydraulic pump.
2. Fully extend the packer (see Figure 3-1), then push the red emergency STOP button (see Figure 3-2) to stop the packer in this position.
3. Lock out and tag out the vehicle (see *Locking Out and Tagging Out the Vehicle* on page 12).

Inspecting the Packer

To inspect the packer:

1. Check the follower panel hinges and verify that there is no wear on the panel surface.

Figure 3-9 Follower panels



2. Inspect the scraper (nylon strip) at the bottom of the floating panel (see Figure 3-9). This nylon strip wipes out dirt every time the packer goes back and forth.

   Replace this scraper before it is worn down to the top of its holding screws (see *Lower Wear Pad* on page 60).
3. Visually inspect both packer side rails (see Figure 3-10) and rollers.

   If signs of premature wear are apparent, replace the faulty parts (see *Sliding Shoes* on page 48, *Follower Panel Roller Assemblies* on page 65, and *Rollers* on page 67).

Figure 3-10 Side rail



4. Check out for leaks on hydraulic hoses and tubes.

   Tighten leaking connections and/or replace defective hoses.

5. Verify cylinder rods:

   5 a. Make sure that cylinder rod ends are clear of debris.

   5 b. Make sure that cylinder rods have no scratches that may cause the cylinder to leak oil.

   Should you find oil leaks, the cylinder must be replaced immediately.

IMPORTANT: During the warranty period, *do not* attempt to change cylinder seals and packing.

6. Check the packer for vertical and horizontal movements. See *Testing for Excessive Wear* on page 49 for correct procedure.

   If the packer shows vertical or horizontal movement, wear pads need to be replaced. Extensive wear on the hopper floor also suggests that sliding shoes require immediate replacement (see *Sliding Shoes* on page 48).

7. Verify packer panel adjustment for knocking noises.

   Knocking noises indicate that the Extend proximity switch requires adjustment (see *Adjusting Packer Extend Proximity Switch* on page 79). Proper adjustment is necessary to prevent cylinders from bottoming out under pressure.

8. Make sure that hydraulic cylinders are not leaking internally (resulting in insufficient packing power). For more information, see *Inspecting Hydraulic Cylinders* on page 157.

Preparing Packer for Removal - Std. Units (Method A)

NOTE: There are 2 methods for preparing and removing the packer panel from a standard AUTOMIZER™ vehicle (Method A [taking packer out through the rear of the body] and Method B [taking packer out through the hopper]). If you use Method A for the preparation of the packer panel, you must then use Method A for the removal of the packer. The same goes for Method B. The choice between both removal methods depends on numerous factors such as the mechanics preferences, the condition of various packer parts and the type of lifting systems available.

Follow these steps before proceeding with the removal of the packer panel:

1. Start the engine and engage the hydraulic pump.
2. Using the joystick, extend the automated arm to get better access to the hopper area.

Danger!

Secure the area around the path of the automated arm when performing maintenance or repair.

3. Extend the packer panel to within 12 inches of the end of the stroke.

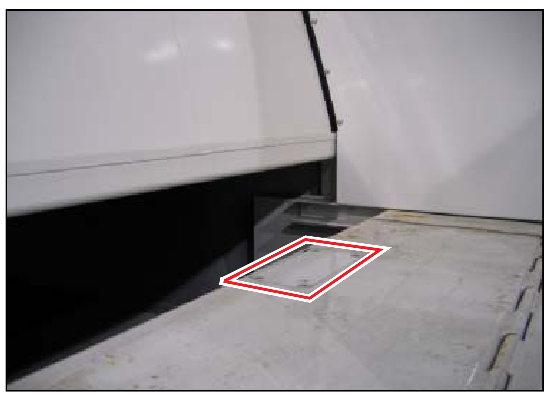
NOTE: To extend (or retract) the packer over a short distance, push the green (or yellow) button and then push the red emergency button immediately. Repeat the process until the packer has reached the desired position.

NOTE: To reactivate the hydraulic system after the red button is pushed, you have to pull said button back up then turn ON the Pump switch on the in-cab control panel (see Figure 2-5).

Danger! Do not enter the hopper while the packer is moving.

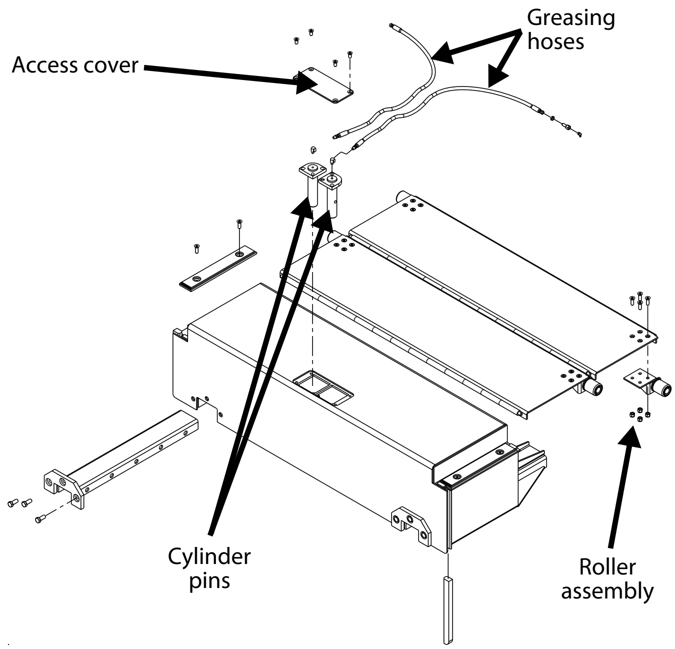
4. Turn off the hydraulic pump and the engine.
5. Lock out and tag out the vehicle (see *Locking Out and Tagging Out the Vehicle* on page 12).
6. Remove the packer cylinder access cover on the packer panel.

Figure 3-11 Packer cylinder access cover



7. Disconnect the cylinder pins from the greasing hoses (see Figure 3-18).
8. Remove the 2 rear cylinder pins (see Figure 3-18).

Figure 3-12 Removing pins and hoses



The cylinder pin top plate has 2 threaded holes to be used as a puller by inserting two ½ NC bolts.

Removing the Packer Panel - Std. Units (Method A)

NOTE: There are 2 methods for preparing and removing the packer panel from a standard AUTOMIZER™ vehicle (Methods A and B). If you used Method A for the preparation of the packer panel, you must then use Method A for the removal of the packer.

Once you have prepared the packer panel for removal, you can now proceed with the following removing procedure.

1. Attach a suitable chain/cable to the packer panel and pull the panel towards the rear of the body.

NOTE: When pulling the follower panels, they must be properly supported.

2. If necessary, carry out the procedure for replacing floor guides (see *Replacing Packer Wipers* on page 65).
3. Re-assemble in reverse order.

Preparing Packer for Removal - Std. Units (Method B)

NOTE: There are 2 methods for preparing and removing the packer panel from a standard AUTOMIZER™ vehicle (Method A [taking packer out through the rear of the body] and Method B [taking packer out through the hopper]). If you use Method A for the preparation of the packer panel, you must then use Method A for the removal of the packer. The same goes for Method B. The choice between both removal methods depends on numerous factors such as the mechanics preferences, the condition of various packer parts and the type of lifting systems available.

Follow these steps before proceeding with the removal of the packer panel:

1. Start the engine and engage the hydraulic pump.
2. Using the joystick, extend the automated arm to get better access to the hopper area.

Danger! Secure the area around the path of the automated arm when performing maintenance or repair.

3. Fully retract the packer by pressing the yellow button on the packer control station.

Danger! Do not enter the hopper while the packer is moving.

4. Turn off the hydraulic pump and the engine.
5. Lock out and tag out the vehicle (see *Locking Out and Tagging Out the Vehicle* on page 12).

Accessing the Packer - Std. Units (Method B)

Once you have prepared the packer for removal, you need to gain access to the packer.

To do so:

1. Remove both side rail shields (see Figure 3-13).

   6 bolts are to be removed to take off the right-hand side rail shield.

   5 bolts are to be removed to take off the left-hand side rail shield.

Figure 3-13 Side rail shields



2. Remove both side rails (see Figure 3-14 and Figure 3-15).

Figure 3-14 Right-side rail

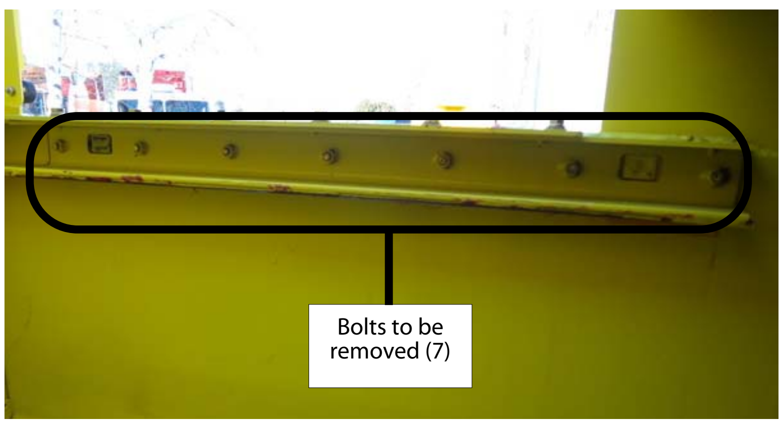
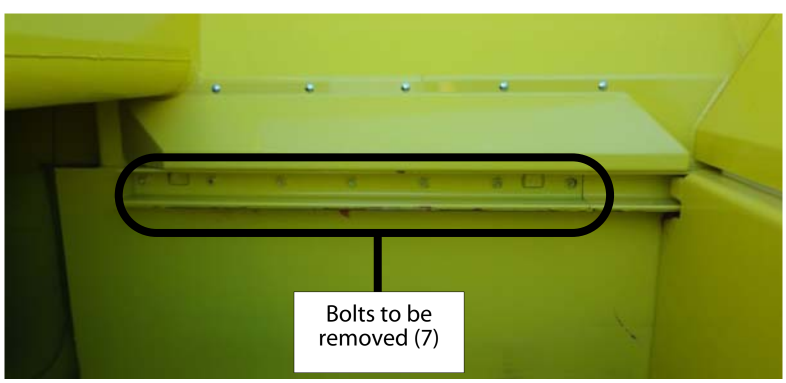
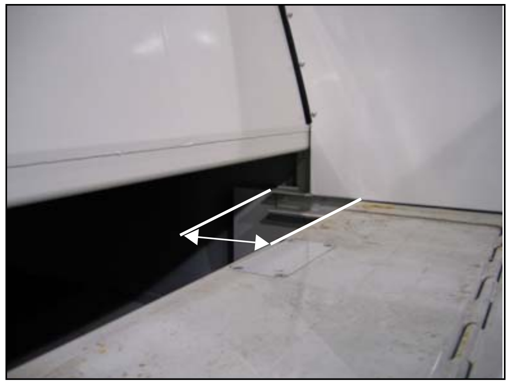


Figure 3-15 Left-side rail



3. Start the engine and engage the hydraulic pump.
4. Extend the packer to about 12 inches before the end of the stroke (see Figure 3-16).

Figure 3-16 Packer at about 12 inches from end of stroke



Danger!



Do not enter the hopper while the packer is moving.

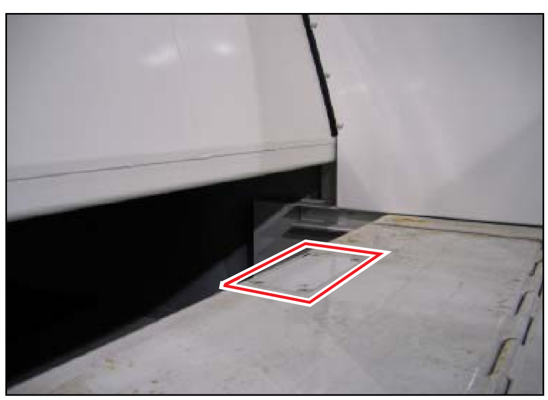
5. Turn OFF the hydraulic pump and the engine.

Disconnecting the Packer - Std. Units (Method B)

Once you have gained access to the packer, you must now disconnect it:

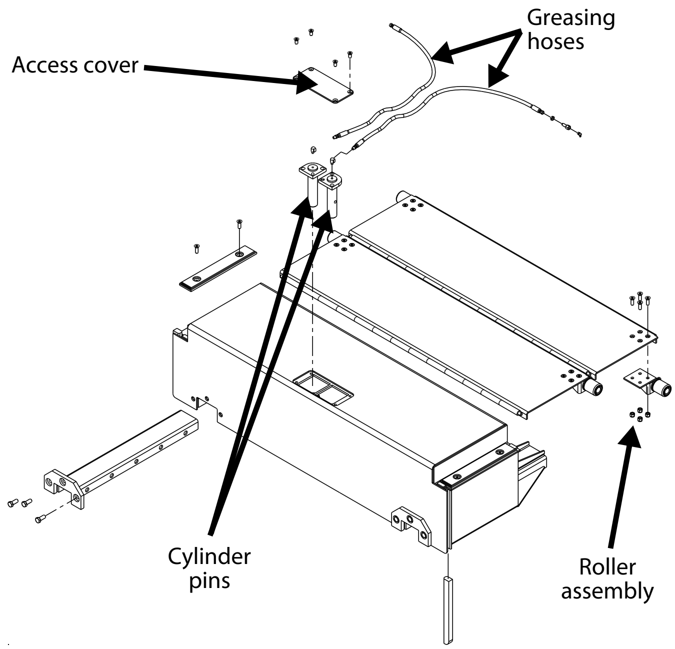
1. Remove the floating panel from the hopper (see *Removing Lower Wear Pad - Standard Units* on page 60).
2. Remove the access cover on the packer panel to reach the cylinder pins (see Figure 3-17).

Figure 3-17 Packer cylinder access cover



3. Disconnect the cylinder pins from the greasing hoses (see Figure 3-18).
4. Remove both cylinder pins (see Figure 3-18).

Figure 3-18 Removing pins and hoses



The cylinder pin top plate has 2 threaded holes to be used as a puller by inserting two ½ NC bolts.

5. Start the engine and engage the hydraulic pump.
6. Retract both hydraulic cylinders.
7. Turn OFF the hydraulic pump and the engine.

Removing the Packer Panel - Std. Units (Method B)

NOTE: There are 2 methods for preparing and removing the packer panel from a standard AUTOMIZER™ vehicle (Methods A and B). If you used Method B for the preparation of the packer panel, you must then use Method B for the removal of the packer.

Once the packer has been prepared, accessed and disconnected, you can remove it from the hopper.

To do so:

1. Remove all packer roller assemblies from the follower panels (see Figure 3-18).
2. Fold the follower panels over the packer (see Figure 3-33).
3. Weld the follower panels to the packer.
4. Attach the packer to a lifting device (fork lift, etc.) and lift it out of the hopper.

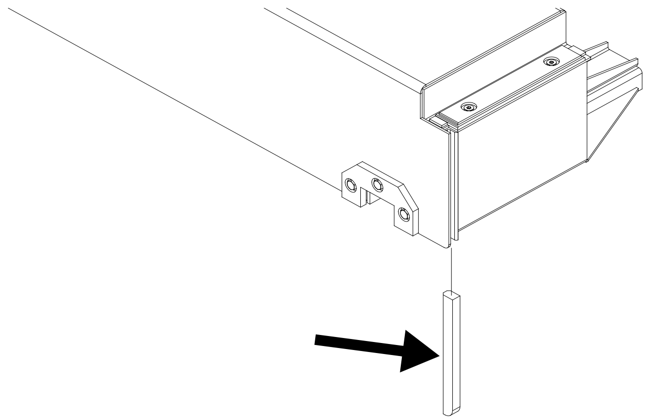
Installing a New Packer - Std. Units (Method B)

To install a new packer:

1. Using a lifting device, lower the new packer into the hopper, properly aligning the packer with the floor guides.
2. Install a new wiper blade on each side of the packer (see Figure 3-19).

   These wiper blades may require to be adjusted to fit between the new packer and the hopper walls.

Figure 3-19 Plastic wiper blade



3. Install roller assemblies and follow the procedure on page 35 — "Disconnecting the Packer - Std. Units (Method B)" — in reverse order. Also, follow the procedure on page 33 — "Accessing the Packer - Std. Units (Method B)" — in reverse order to reinstall both side rail shields.
4. Once finished re-assembling the removed components, lubricate and check for proper operation of the packer.

Preparing Packer for Removal - Co-Mingle Units

Follow these steps before proceeding with the removal of the packer panel:

1. Start the engine and engage the hydraulic pump.
2. Using the joystick, extend the automated arm to get better access to the hopper area.

Danger!



Secure the area around the path of the automated arm when performing maintenance or repair.

3. Fully retract the packer by pressing the yellow button on the packer control station.

Danger! Do not enter the hopper while the packer is moving.

4. Rotate the chute so that its upper edge is in the middle of the hopper or at its highest position.
5. Turn off the hydraulic pump and the engine.
6. Lock out and tag out the vehicle (see *Locking Out and Tagging Out the Vehicle* on page 12).

Accessing the Packer - Co-Mingle Units

Next, you need to gain access to the packer. To do so:

1. Remove the chute (see Figure 3-20). To perform this task, apply the following steps:
   - 1 a. Use a suitable lifting device (e.g. sling or cable) to hold the chute in place.
   - 1 b. Take the hopper deflector off (see Figure 3-21) by removing all bolts that hold it in place.
   - 1 c. Remove all bolts that secure the chute front support to the chute stopper assembly and floating panel (see Figure 3-22).
   - 1 d. Take off the chute front support.
   - 1 e. Remove all bolts that hold the chute stopper assembly in place (see Figure 3-21).
   - 1 f. Take off the chute stopper assembly.

Figure 3-20 Chute

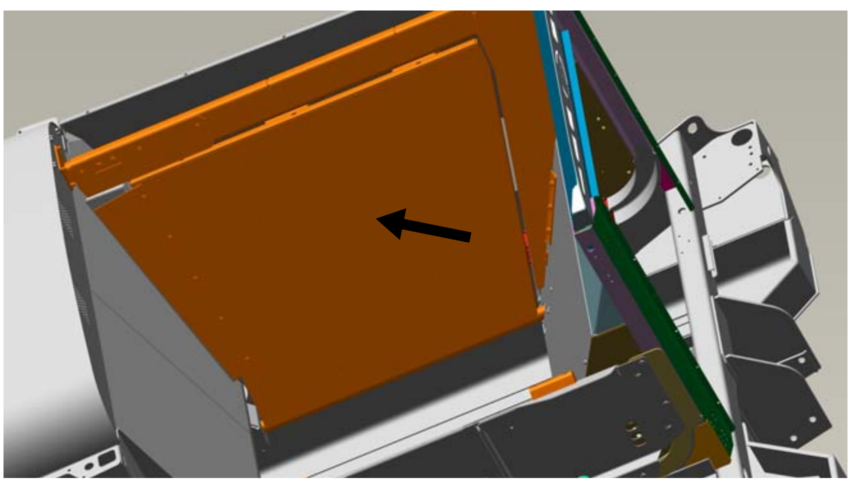


Figure 3-21 Hopper deflector & chute stopper assembly

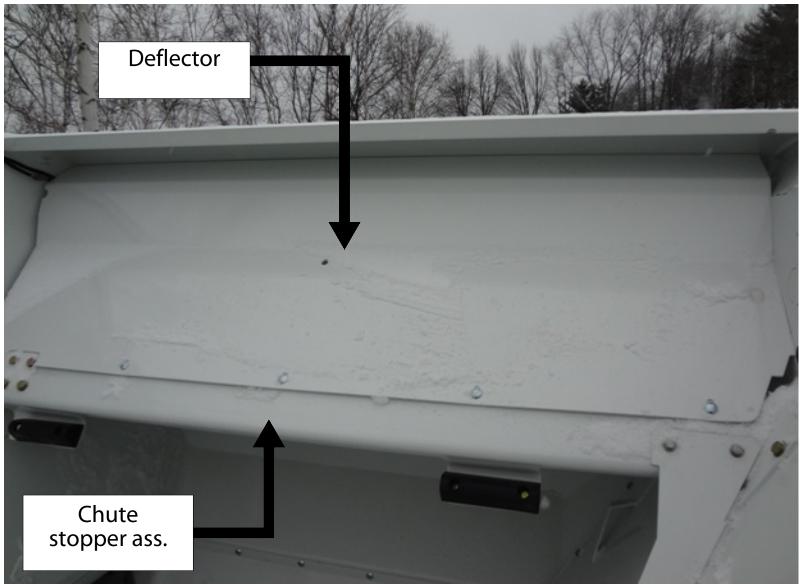


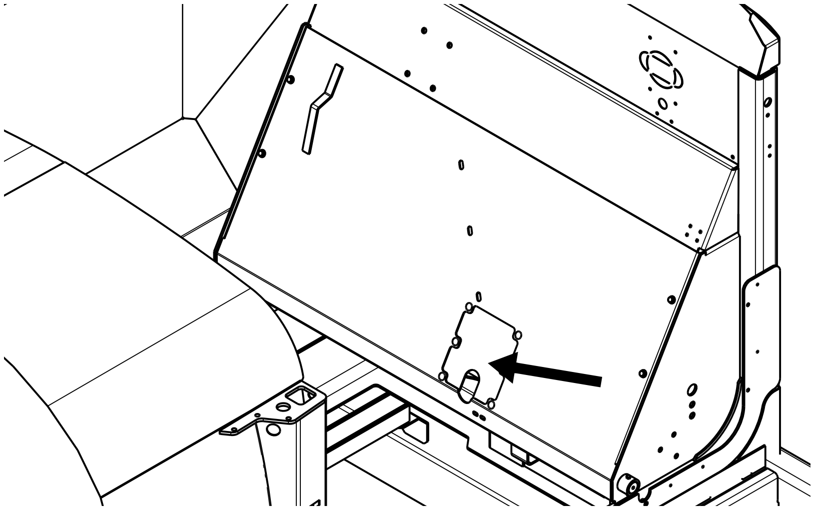
Figure 3-22 Chute front support



1 g. Remove all bolts holding the chute shaft cover in place (see Figure 3-23).

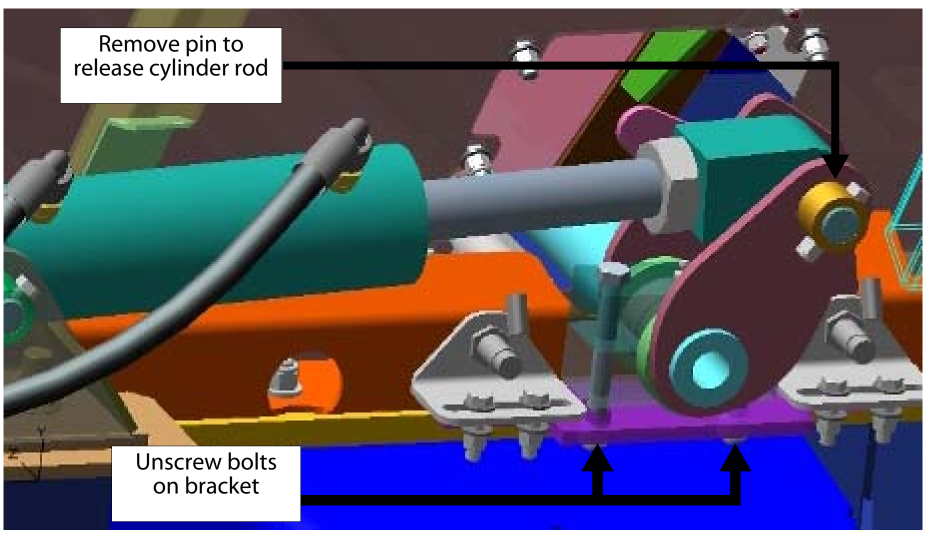
1 h. Take off the chute shaft cover.

Figure 3-23 Chute shaft cover



1 i. Remove the chute cylinder rod-end pin (see Figure 3-24).

Figure 3-24 Chute cylinder



1 j. Unscrew the 2 bolts on the front shaft bracket to release the front end of the chute shaft (see Figure 3-24).

1 k. Unscrew the 2 bolts on the rear shaft bracket to release the rear end of the chute shaft (see Figure 3-26).

Figure 3-25 Chute shaft

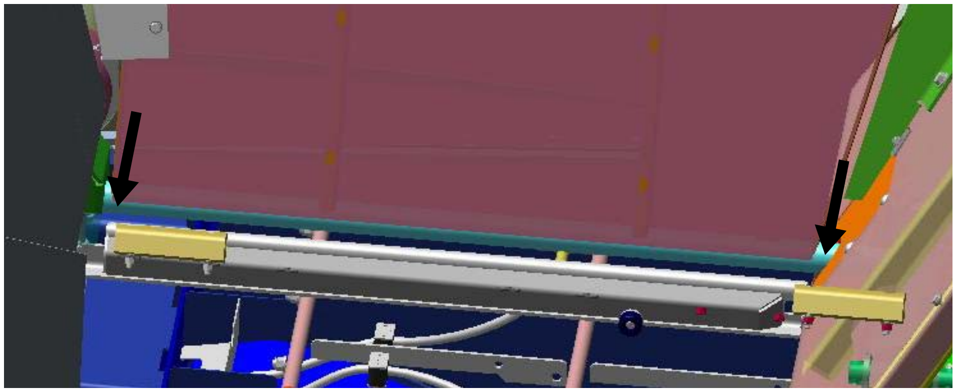
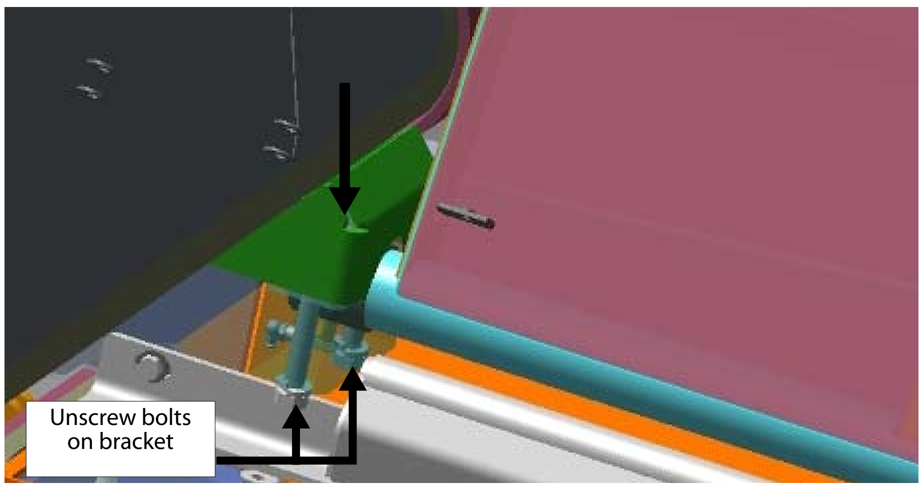


Figure 3-26 Rear chute shaft bracket



1 l. Carefully lift the chute out of the hopper.

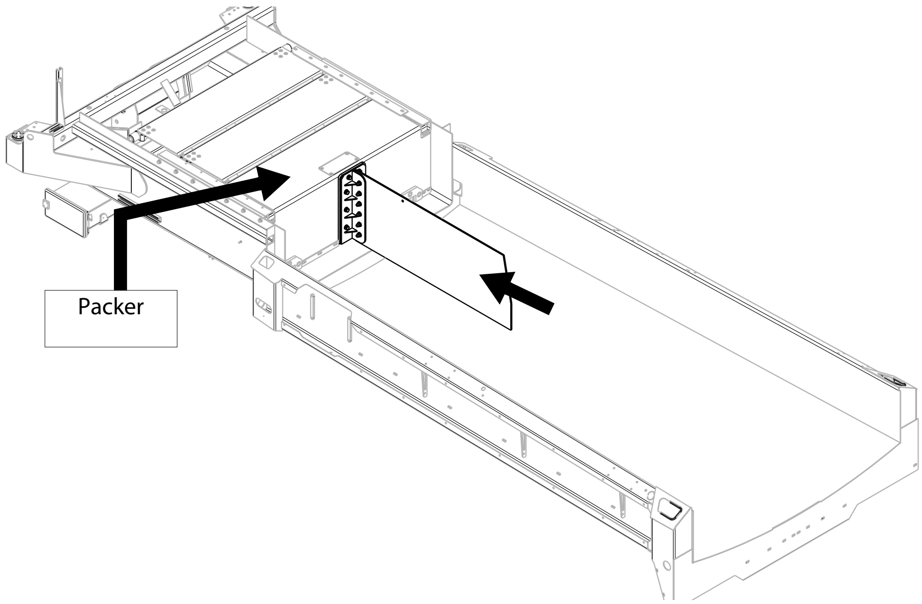
2. Remove all bolts that secure the hopper divider guard in place (see Figure 3-27).
3. Take off the hopper divider guard.

Figure 3-27 Hopper divider guard



4. Remove all bolts that secure the hopper divider (see Figure 3-28) to the packer.
5. Take the hopper divider out of the hopper using a lifting device.

Figure 3-28 Hopper divider



6. Remove both side rail shields (see Figure 3-13).

   6 bolts are to be removed to take off the right-hand side rail shield.

   5 bolts are to be removed to take off the left-hand side rail shield.
7. Remove both side rails (see Figure 3-14 and Figure 3-15).
8. Start the engine and engage the hydraulic pump.
9. Extend the packer to about 12 inches before the end of the stroke (see Figure 3-16).
10. Turn OFF the hydraulic pump and the engine.

Disconnecting the Packer - Co-Mingle Units

Once you have gained access to the packer, you must now disconnect it:

1. Remove the floating panel from the hopper (see *Removing Lower Wear Pad - Co-Mingle Units* on page 62)
2. Remove the access cover on the packer panel to reach the cylinder pins (see Figure 3-17).
3. Disconnect the cylinder pins from the greasing hoses (see Figure 3-18).
4. Remove both cylinder pins (see Figure 3-18).

   The cylinder pin top plate has 2 threaded holes to be used as a puller by inserting two ½ NC bolts.
5. Start the engine and engage the hydraulic pump.
6. Retract both hydraulic cylinders.

Removing the Packer Panel - Co-Mingle Units

Once the packer has been prepared, accessed and disconnected, you can remove it from the hopper.

To do so:

1. Remove all packer roller assemblies from the follower panels (see Figure 3-18).
2. Fold the follower panels over the packer (see Figure 3-33).
3. Weld the follower panels to the packer.
4. Attach the packer to a lifting device (fork lift, etc.) and lift it out of the hopper.

Installing a New Packer - Co-Mingle Units

To install a new packer:

1. Using a lifting device, lower the new packer into the hopper, properly aligning the packer with the floor guides.
2. Install a new wiper blade on each side of the packer (see Figure 3-19).

   These wiper blades may require to be adjusted to fit between the new packer and the hopper walls.
3. Install roller assemblies and follow the procedure on page 42 — “Disconnecting the Packer - Co-Mingle Units” — in reverse order.
4. Start the engine and engage the hydraulic pump.
5. Fully retract the packer.

Danger! Do not enter the hopper while the packer is moving.

6. Turn OFF the hydraulic pump and the engine.
7. Reinstall both side rails by putting all the bolts back in place (see Figure 3-29 and Figure 3-30).

Figure 3-29 Right side rail



Figure 3-30 Left side rail



8. Reinstall both side rail shields by putting all the bolts back in place (see Figure 3-13).
9. Reinstall the hopper divider (see Figure 3-31) with an appropriate lifting device.

Figure 3-31 Hopper divider



10. Reinstall the hopper divider guard (see Figure 3-27).
11. Proceed with the reinstallation of the chute.

    To perform this task, go to page 38 and use steps 1a) to 1l) in reverse order of disassembly.
12. Once finished re-assembling the removed components, lubricate and check for proper operation of the packer and the chute.

Packer Cylinders

Packer cylinders that become defective through time need to be replaced. To do so, you first have to access the faulty cylinder, remove it, and then properly proceed with the installation of the replacement cylinder. These steps are explained in the following sections.

Accessing Packer Cylinders

Caution! Packer cylinders must be removed with a proper lifting device. This task must be performed by two people.

To access the packer cylinders:

1. Start the engine and engage the hydraulic pump.
2. Using the joystick, extend the automated arm to get a better access to the hopper area.

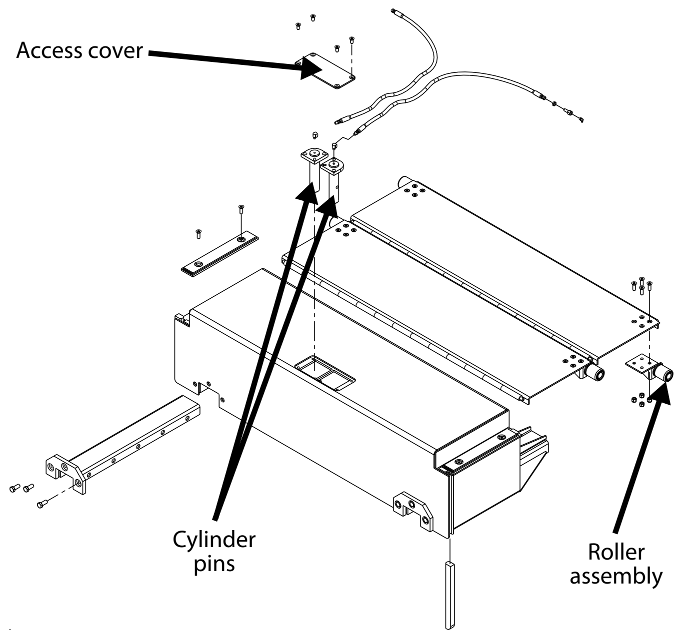
Danger! Secure the area around the path of the arm when performing maintenance or repair.

3. Fully extend the packer.

Danger! Do not enter the hopper while the packer is moving.

4. Disengage the pump and stop the engine.
5. Lock out and tag out the vehicle (see *Locking Out and Tagging Out the Vehicle* on page 12).
6. Remove the floating panel (for details on how to remove the floating panel, see *Lower Wear Pad* on page 60 for standard units and on page 62 for co-mingle units).
7. Open the access cover.
8. Disconnect both rear cylinder pins from the greasing hoses (see Figure 3-32).
9. Remove both rear cylinder pins (see Figure 3-32).
10. Start the engine and engage the pump.
11. Fully retract both cylinders.
12. Disengage the pump and stop the engine.
13. Lock out and tag out the vehicle (see *Locking Out and Tagging Out the Vehicle* on page 12).

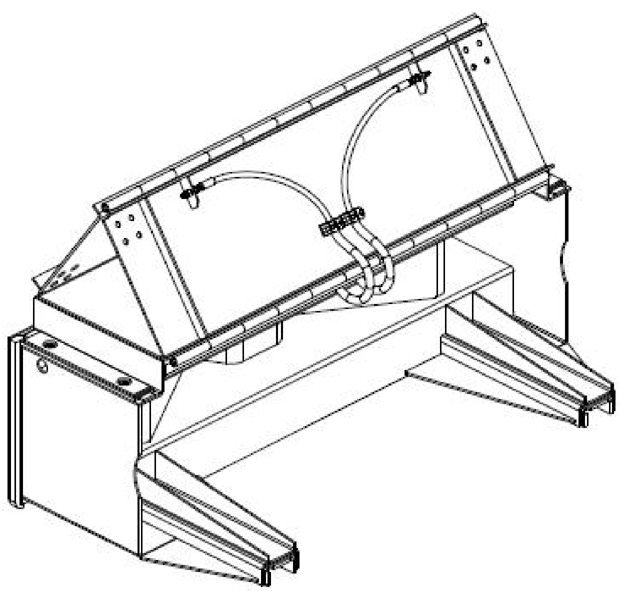
Figure 3-32 Removing rear cylinder pins



14. Remove the roller assemblies on the follower panels (see *Follower Panel Roller Assemblies* on page 65).

15. Fold the follower panels over the packer (see Figure 3-33).

Figure 3-33 Folded follower panels



Removing Faulty Packer Cylinder

Caution!

Packer cylinders must be removed with a proper lifting device. This task must be performed by two people.

To remove the faulty packer cylinder:

1. Carry out the preceding procedure (see *Accessing Packer Cylinders* on page 45).
2. Ensure the hydraulic pump is disengaged and the engine is stopped.
3. Ensure the truck is locked out and tagged out properly (see *Locking Out and Tagging Out the Vehicle* on page 12)
4. Disconnect both hydraulic hoses from the faulty cylinder (use absorbent material to catch oil spills).

Figure 3-34 Location of cylinder hydraulic hoses



5. Enter the hopper to attach and secure the cylinder to an appropriate lifting device.
6. Remove the piston side pin that holds the faulty cylinder to the front of the body. To do so:
   - **6 a.** Remove all 4 bolts that are on the top of the pin (see Figure 3-35).
   - **6 b.** Once all bolts have been removed, locate the 2 holes that are threaded.
   - **6 c.** Install puller screws into the threaded holes.
   - **6 d.** Tighten the screws to lift up the pin.

     Tighten until the cylinder breaks loose.

Figure 3-35 Bolts securing piston side of cylinder



IMPORTANT: Protect the proximity switch during removal of the cylinder.

7. Remove the proximity switch target and save it for the new cylinder.
8. Replace the faulty cylinder with a new one. If covered by warranty, contact Labrie*Plus* for replacement.

Finishing Up Packer Cylinder Replacement

To finish up cylinder replacement:

1. Reinstall the piston side pin and connect the hydraulic hoses.
2. Extend both cylinders.
3. Reinstall both rear cylinder pins.
4. Connect the greasing hoses to the cylinder pins.
5. Unfold the follower panels and reinstall the roller assemblies.
6. Grease the cylinder pins and check for proper packer operation (see *Packer Lubrication Points (1)* on page 113).
7. Readjust the proximity switch if need be (for proximity switch readjustment, see *Adjusting Packer Extend Proximity Switch* on page 79).

Sliding Shoes

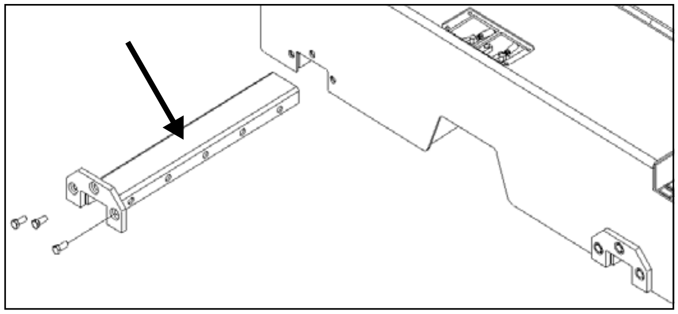
The packer guiding system is made of 2 different types of steel: sliding shoes are made of a softer steel type to wear out before the floor guides.

To keep the packer in good working order and prevent unnecessary down time, replace sliding shoes and wear pads (see page 56) before extensive wear or damage can be seen on the hopper floor and walls.

After continuous use over an extended period of time, floor guides may need to be replaced.

NOTE: It is not necessary to remove the packer to perform this procedure.

Figure 3-36 Sliding shoe



Testing for Excessive Wear

To test for excessive wear:

1. Lock out and tag out the vehicle (see *Locking Out and Tagging Out the Vehicle* on page 12).
2. With a pry bar, try to move the packer vertically (up and down motion) and horizontally (side to side motion).

   It should not move vertically by more than 3/16" and horizontally by more than 1/8". If movement is greater than the values indicated above, check for excessive wear on both packer sliding shoes and on the wear pads under the side rails (see page 56).

Preparing for Sliding Shoe Replacement

Follow this procedure before proceeding with sliding shoe replacement:

1. Start the engine and engage the hydraulic pump.
2. With the joystick, extend the automated arm to get better access to the hopper area.

Danger! Secure the area around the path of the automated arm when performing maintenance or repair.

3. Push the yellow button on the packer control station to fully retract the packer.

Danger! Never enter the hopper while the packer is moving.

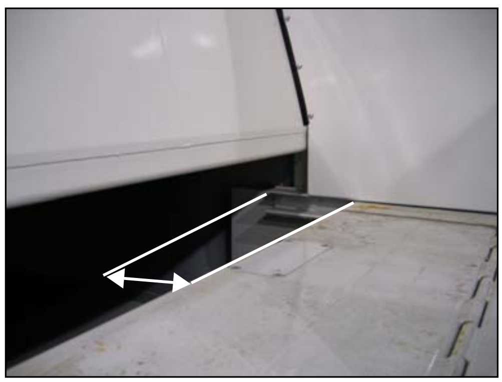
4. Turn OFF the hydraulic pump and the engine.
5. Lock out and tag out the vehicle (see *Locking Out and Tagging Out the Vehicle* on page 12).
6. Go behind the packer and, with a grinder or cutting tools, remove the welds on both sliding shoes (see Figure 3-37).

Figure 3-37 Welds to be removed



7. From the cab, start the engine, engage the hydraulic pump and extend the packer to about 18 inches before the end of the stroke.

Figure 3-38 Packer at about 18 inches from end of stroke



NOTE: To extend (or retract) the packer over a short distance, push the green (or yellow) button and then push the red emergency button immediately. Repeat the process until the packer has reached the desired position.

NOTE: To reactivate the hydraulic system after the red button is pushed, you have to pull this button back up then turn ON the pump switch on the in-cab control panel (see Figure 2-5).

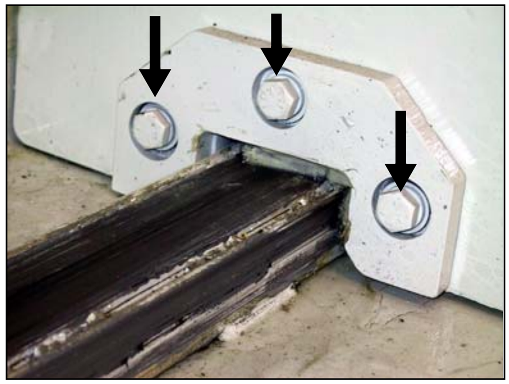
Danger! Never enter the hopper while the packer is moving.



8. Turn OFF the hydraulic pump and the engine.
9. Lock out and tag out the vehicle (see *Locking Out and Tagging Out the Vehicle* on page 12).

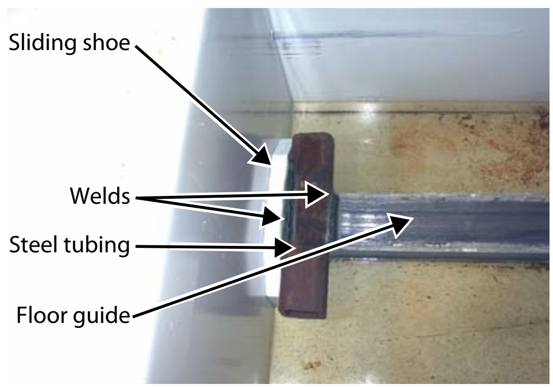
10. Remove all 3 bolts retaining each sliding shoe (see Figure 3-39).

Figure 3-39 Retaining bolts



11. Tack weld a piece of steel tubing to the floor rail and to the front of both sliding shoes.

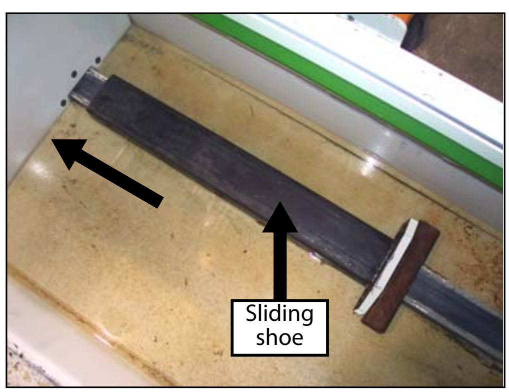
Figure 3-40 Tack welding



12. Start the engine, engage the hydraulic pump, and press the yellow button to slowly retract the packer.

The sliding shoes will come out under the packer as it is retracting (see Figure 3-41).

Figure 3-41 Packer retracting, exposing sliding shoe



Replacing Sliding Shoes

Mechanics must first follow the preceding procedure (*Preparing for Sliding Shoe Replacement* on page 49) before continuing with the procedure below.

To replace the worn-out sliding shoes, proceed this way:

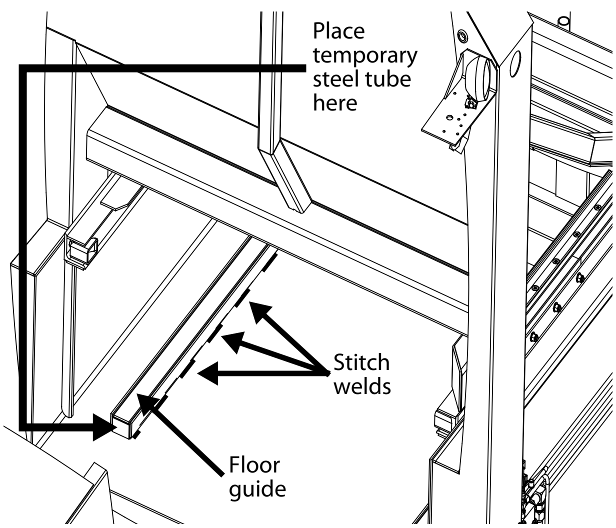
NOTE: This procedure includes removing and replacing the floor guides.

1. Turn OFF the hydraulic pump and the engine.
2. Lock out and tag out the vehicle (see *Locking Out and Tagging Out the Vehicle* on page 12).
3. Remove the old sliding shoes and temporary steel tubing.

NOTE: Removal of the packer panel is not necessary within this procedure. However, should you prefer to proceed with such removal, refer to "Removing the Packer Panel - Std. Units (Method B)" on page 36 if you have a standard unit or "Removing the Packer Panel - Co-Mingle Units" on page 42 if you have a co-mingle unit.

4. Mark the *exact* location of both floor guides.
5. Using a grinder or cutting tool, remove the floor guides by cutting the stitch welds.

Figure 3-42 Stitch welds



6. Clean the hopper floor and wall surfaces.
7. Install temporary steel tubes on the body side end of both floor guides (see Figure 3-42).
8. Position the new guides on the hopper floor using the marks made in Step 4 (do not tack or weld yet).

   Make sure the floor guides are parallel to the hopper walls.
9. (*If packer has been removed*) Reinstall the packer on the floor guides with the new sliding shoes on it.

Reconnect cylinders to the packer. To do so, reverse the procedure entitled “Disconnecting the Packer - Std. Units (Method B)” on page 35.

Then go to Step 19.

Figure 3-43 Packer sitting on floor guide



10. Install the new sliding shoes on the packer.
11. Weld a tube on both floor guides at the same position in relation to the packer.
12. Exit the hopper.
13. Start the truck and engage the hydraulic pump.
14. Slowly extend the packer to make the sliding shoe go under the packer.

Danger!



Never enter the hopper while the packer is moving.

15. When the sliding shoes are back in place, turn OFF the hydraulic pump and the engine.
16. Lock out and tag out the vehicle (see *Locking Out and Tagging Out the Vehicle* on page 12).
17. Put back and tighten all retaining bolts.
18. Remove the tubes that were installed in Step 11, then grind down to a smooth surface.

NOTE: If the wear pads at the top of the packer need to be replaced, see *Upper Wear Pads* on page 56.

19. Start the truck and engage the hydraulic pump.
20. Extend the packer.
21. Turn OFF the hydraulic pump and the engine.
22. Lock out and tag out the vehicle (see *Locking Out and Tagging Out the Vehicle* on page 12).
23. Align the packer with the hopper walls.

24. Tack weld both floor guides to the floor.

Figure 3-44   Tack weld on both sides of the floor guide



25. Start the truck and engage the hydraulic pump.

26. Retract the packer completely.

Danger! Never enter the hopper while the packer is moving.

27. Turn OFF the hydraulic pump and the engine.

28. Lock out and tag out the vehicle (see *Locking Out and Tagging Out the Vehicle* on page 12).

29. Align the packer with the hopper walls.

30. Tack weld both floor guides to the floor in front of the packer.

31. Weld both sliding shoes to the packer.

Figure 3-45   View from behind fully retracted packer



Finishing Up Replacing Sliding Shoes and Floor Guides

Apply the following procedure to finish up replacing the sliding shoes and floor guides:

1. Run the packer a few times.

Danger! Never enter the hopper while the packer is moving.

---

   1 a. If the packer is binding, apply some primer paint on the floor guide to find out where the rubbing is occurring.

   1 b. Run the packer a few times again. The location where the paint has come off indicates the surface that needs to be grinded.

2. If the packer slides properly, weld the floor guides to the floor as illustrated in Figure 3-46.
3. Fully extend the packer to finish welding behind it.
4. Remove the temporary steel tubes installed in Step 7 on page 52.
5. Spray grease on the floor guides for preventing premature corrosion and wear.

Figure 3-46 Welds on both sides of floor guide



Floor Guides

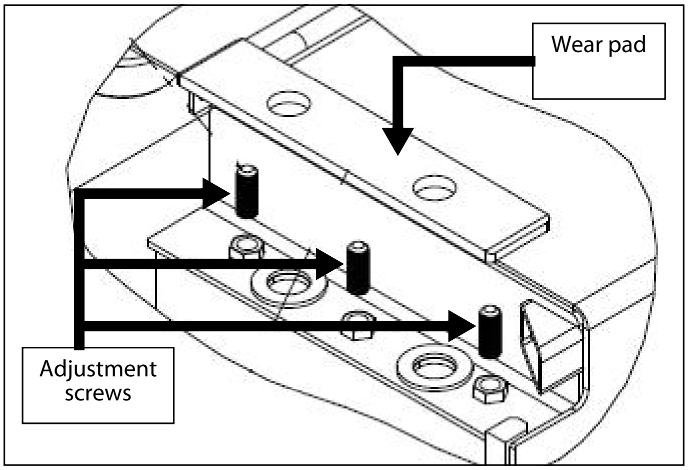
Floor guides wear out over time, so their replacement is necessary for the packer to continue operating properly. Usually, replacement of floor guides is done at the same time when sliding shoes are replaced.

When sliding shoes need to be replaced because of wear, chances are floor guides need replacement too. To replace floor guides, apply the procedure detailed in the “Replacing Sliding Shoes” section on page 52. This procedure includes steps to remove and replace floor guides.

Upper Wear Pads

When the packer moves vertically by more than 3/16" (checked with a pry bar), the upper wear pads must be replaced.

Figure 3-47 Adjustment screws and upper wear pad



Preparing for Upper Wear Pad Replacement

Make sure you go through the following steps:

1. Start the engine and engage the hydraulic pump.
2. Using the joystick, extend the automated arm to get better access to the hopper area.

Danger!



Secure the area around the path of the automated arm when performing maintenance or repair.

3. Turn OFF the hydraulic pump and the engine.
4. Lock out and tag out the vehicle (see *Locking Out and Tagging Out the Vehicle* on page 12).
5. Remove both side rail shields (see Figure 3-48).

   6 bolts are to be removed to take off the right-hand side rail shield.

   5 bolts are to be removed to take off the left-hand side rail shield.

Figure 3-48 Side rail shields



6. Remove both side rails (see Figure 3-49 and Figure 3-50).

Figure 3-49 Right-side rail

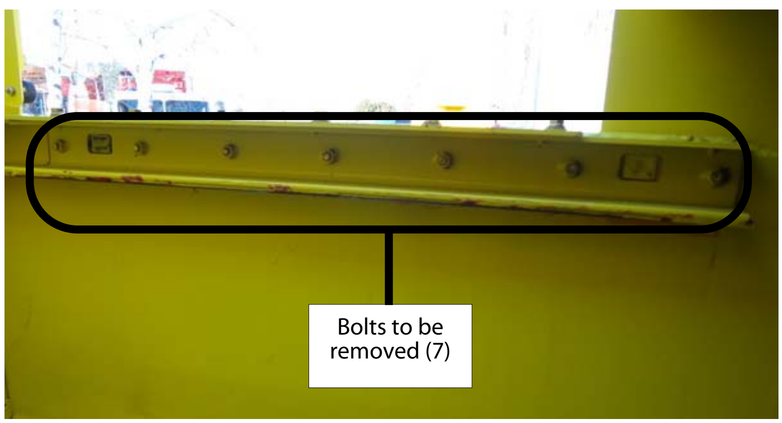
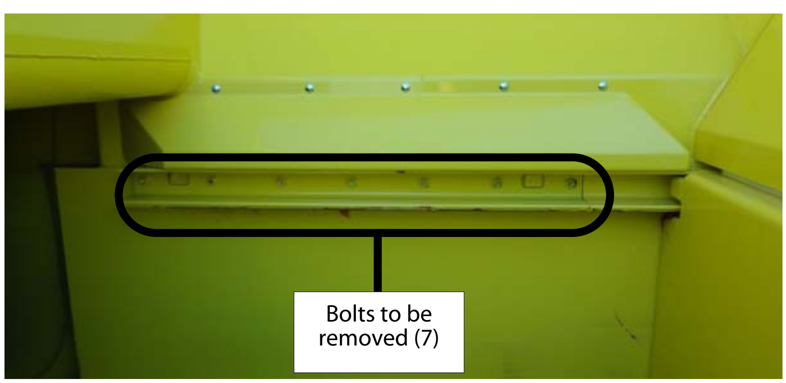
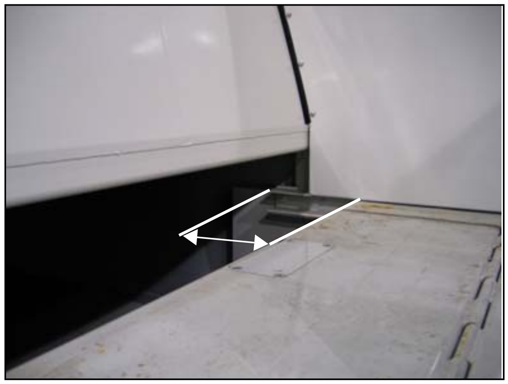


Figure 3-50 Left-side rail



7. Start the engine and engage the hydraulic pump.
8. Extend the packer to about 12 inches before the end of the stroke (see Figure 3-51).

Figure 3-51 Packer at about 12 inches from end of stroke



NOTE: To extend (or retract) the packer over a short distance, push the green (or yellow) button and then push the red button immediately. Repeat the process until the packer has reached the desired position.

NOTE: To reactivate the hydraulic system after the red button is pushed, you have to pull this button back up then turn ON the pump switch on the in-cab control panel (see Figure 2-5).

9. Turn OFF the hydraulic pump and the engine.

Danger! Do not enter the hopper while the packer is moving.

10. Lock out and tag out the vehicle (see *Locking Out and Tagging Out the Vehicle* on page 12).

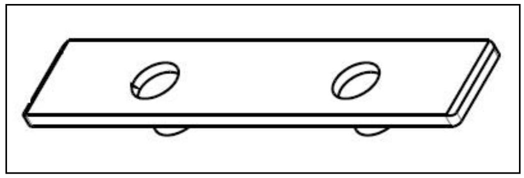
Replacing and Adjusting Upper Wear Pads

Follow this procedure to replace and adjust the upper wear pads:

1. Remove and replace both wear pads (see Figure 3-52 and Figure 3-53).

NOTE: Wear pads are not bolted or screwed to the packer. They are simply placed on each end of the packer, with the 2 protruding guides inserted into the holes provided.

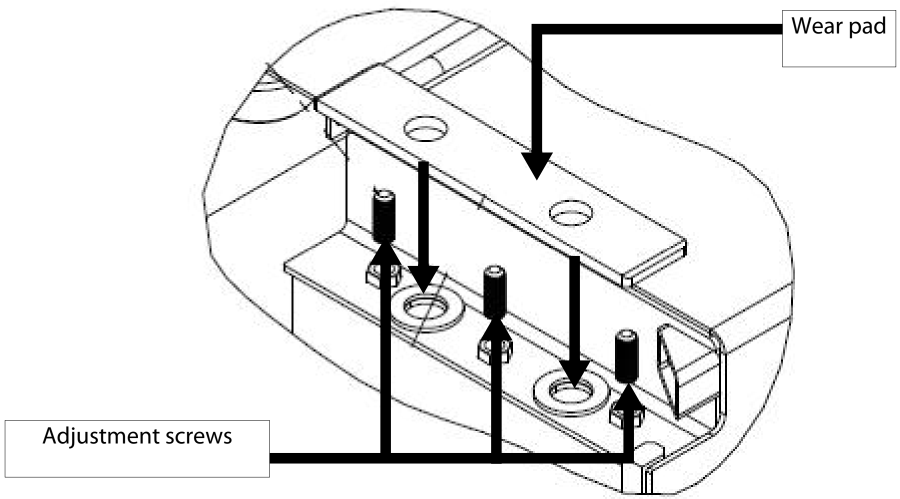
Figure 3-52 Wear pad



2. Use the adjustment screws (see Figure 3-53) to adjust the wear pads in order to maximize stability and smooth motion of the packer.

   Turn the adjustment screws clockwise/counter-clockwise to lower/raise the wear pad until the desired tightening or loosening effect is achieved.

Figure 3-53 Installing and adjusting wear pad



3. Start the engine and engage the hydraulic pump.
4. Retract the packer.

Finishing Up Upper Wear Pad Replacement

Use the following procedure to finish up replacing the upper wear pads:

1. Reinstall both side rails by putting all the bolts back in place (see Figure 3-29 and Figure 3-30).
2. Reinstall the side rail shields by putting all the bolts back in place (see Figure 3-13).
3. Reinstall the deflector cover.

Lower Wear Pad

Danger!



Always lock out and tag out the vehicle during inspection and maintenance (see *Locking Out and Tagging Out the Vehicle* on page 12).

Removing Lower Wear Pad - Standard Units

To remove the lower wear pad on a standard unit, apply the following procedure:

1. Start the engine and engage the hydraulic pump.
2. Using the joystick, extend the automated arm to get better access to the hopper area.

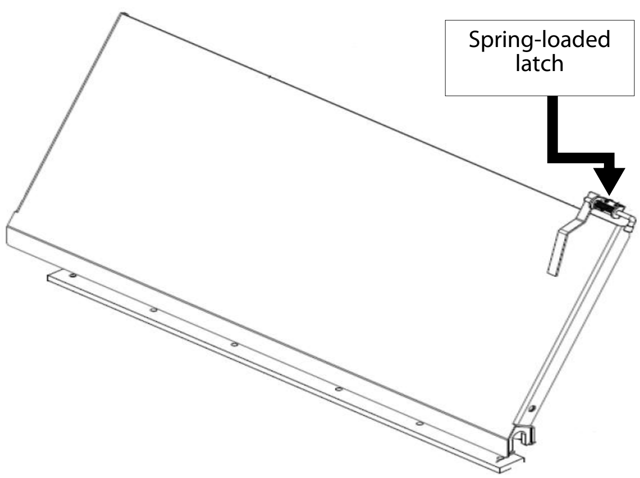
Danger!



Secure the area around the path of the arm when performing maintenance or repair.

3. Fully extend the packer, then push the red emergency STOP button to maintain the packer in its fully extended position.
4. Disengage the hydraulic pump and stop the engine.
5. Lock out and tag out the vehicle (see *Locking Out and Tagging Out the Vehicle* on page 12).
6. Take the floating panel out of the hopper with an appropriate lifting device. To do so:
   - **6 a.** Pull the panel spring-loaded latch to the right and turn its handle a quarter of a turn counter-clockwise so that the latch will not spring back to its original position.

Figure 3-54 Floating panel



6 b. Open the panel mid-way.

Warning!

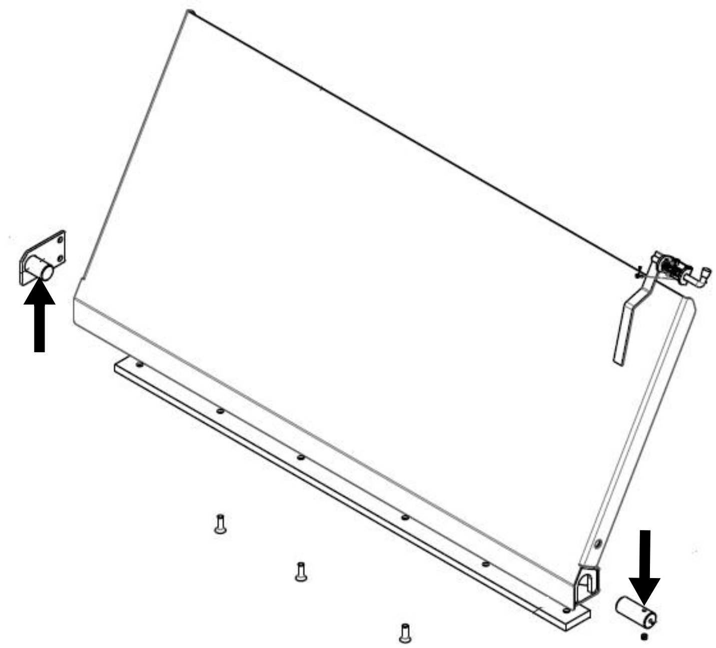


Keep hands and fingers away from the pinch point of the floating panel.

6 c. Secure the panel with a sling or cable.

6 d. Remove the 2 pivots at the base of the floating panel (see Figure 3-55).

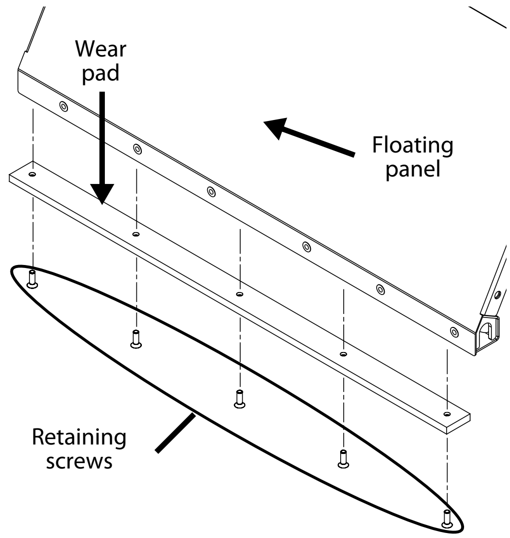
Figure 3-55 Pivots



6 e. Lift the floating panel out of the hopper using an appropriate lifting device.

7. Remove the retaining screws holding the lower wear pad in place (see Figure 3-56).

Figure 3-56 Retaining screws holding lower wear pad



8. Replace the old wear pad with a new one and put back all the retaining screws.
9. Reinstall the floating panel.

   Use steps 6a.) to 6e.) in reverse order of disassembly.
10. After closing back the floating panel, turn the latch handle clockwise so that the latch can spring back to its original position.
11. Check for even contact between the wear pad, packer blade and follower panels.

Removing Lower Wear Pad - Co-Mingle Units

To remove the lower wear pad on a co-mingle unit, apply the following procedure:

1. Start the engine and engage the hydraulic pump.
2. Using the joystick, extend the automated arm to get better access to the hopper area.

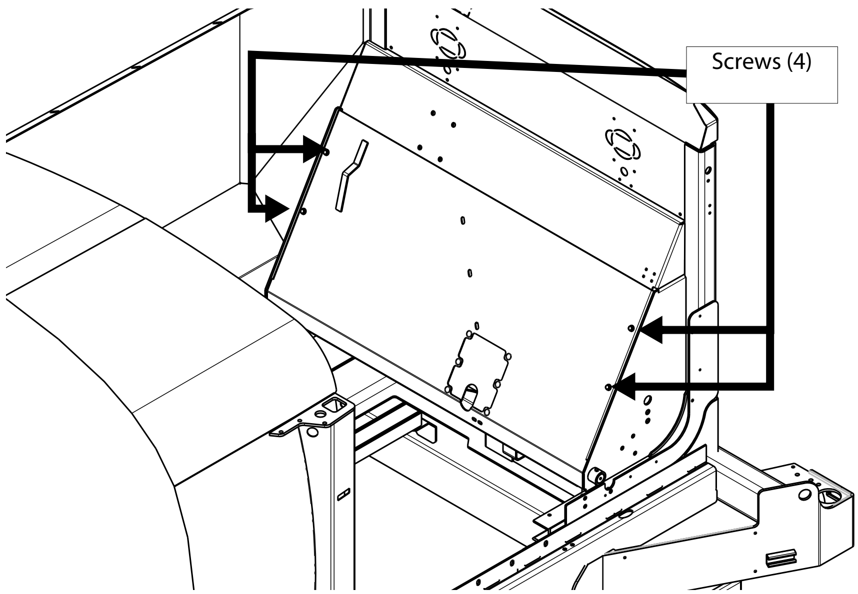
Danger! Secure the area around the path of the arm when performing maintenance or repair.

3. Rotate the chute so that its upper edge is in the middle of the hopper or at its highest position.
4. Fully extend the packer, then push the red emergency STOP button to maintain the packer in its fully extended position.
5. Disengage the hydraulic pump and stop the engine.
6. Lock out and tag out the vehicle (see *Locking Out and Tagging Out the Vehicle* on page 12).
7. Remove the chute (see Figure 3-21).

   Refer to “Accessing the Packer - Co-Mingle Units” on page 38. Step 1 of this procedure gives you the details for removing the chute.

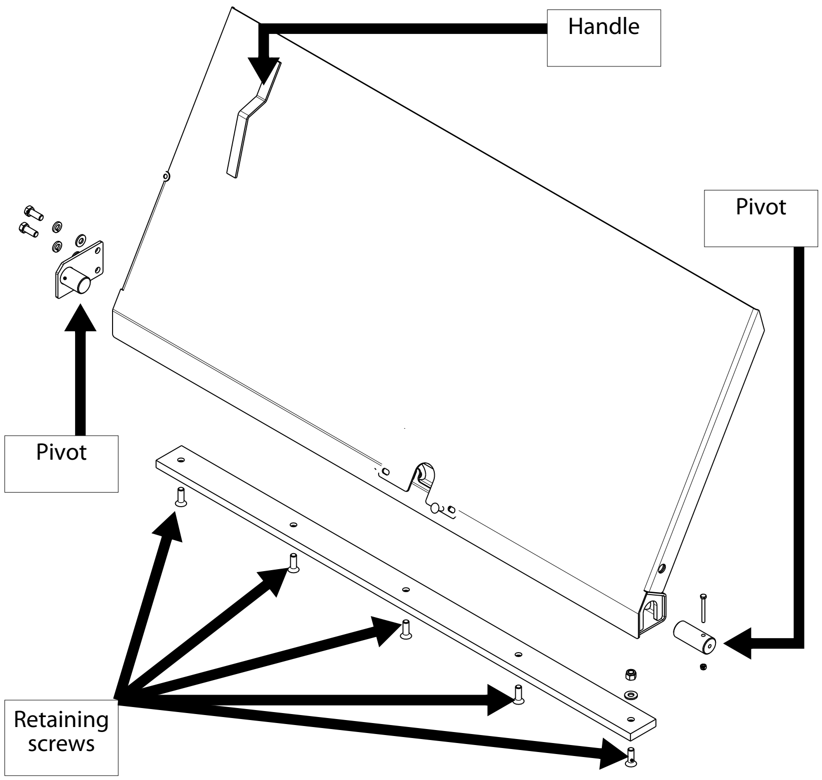
8. Remove the hopper divider guard (see Figure 3-27).
9. Take the floating panel out of the hopper with an appropriate lifting device. To do so:
   - **9 a.** Remove the 4 bolts that secure the floating panel to the front hopper posts (2 on each side).

Figure 3-57 Floating panel



   - **9 b.** Pull the handle (see Figure 3-58) to open the panel mid-way.

Figure 3-58 Floating panel



Warning!



Keep hands and fingers away from the pinch point of the floating panel.

9 c. Secure the panel with a sling or cable.

9 d. Remove the 2 pivots at the base of the floating panel (see Figure 3-58).

9 e. Lift the floating panel out of the hopper using an appropriate lifting device.

10. Remove the retaining screws holding the lower wear pad in place (see Figure 3-58).

11. Replace the old wear pad with a new one and put back all the retaining screws.

12. Reinstall the floating panel.

For this task, use steps 7a.) to 7e.) in reverse order of disassembly.

13. Reinstall the hopper divider guard (see Figure 3-27).

14. Reinstall the chute.

For this task, use steps 4a.) to 4l.) on page 38 in reverse order of disassembly.

15. Check for even contact between the wear pad, packer blade and follower panels.

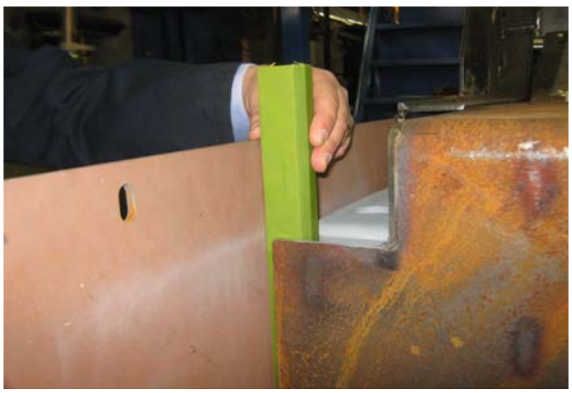
Replacing Packer Wipers

To replace the packer wipers, do the following:

1. Proceed with the preparation of the hopper and the correct positioning of the packer (see *Preparing for Upper Wear Pad Replacement* on page 56).
2. Remove the old packer wipers and replace with new ones.
3. Adjust the packer wipers on both sides of the packer (see Figure 3-59).

   Packer wipers are generally made of UHMW plastic.
4. Use shims as required for proper adjustment.

Figure 3-59 Packer wipers




Follower Panel Roller Assemblies

Packer rollers need to be replaced when damaged or when showing excessive wear or flat spots. The procedures outlined below will show you how to remove both bottom and top rollers and how to replace them.

Replacing Bottom Roller Assemblies

NOTE: This task must be performed by 2 people.

To replace the bottom roller assemblies:

1. Fully retract the packer.
2. Lock out and tag out the vehicle (see *Locking Out and Tagging Out the Vehicle* on page 12).
3. Open the floating panel completely (see *Lower Wear Pad* on page 60).

   In a **co-mingle unit**, mechanics must (1) take the chute out of the hopper (see *Accessing the Packer - Co-Mingle Units* on page 38), (2) remove all 4 bolts that secure the panel to the hopper posts, and (3) open the floating panel by pulling the panel handle (see Figure 3-58).
4. Remove the left-hand side bottom roller and replace it:

   4 a. Using a 5/16-inch Allen wrench and a 3/4-inch box, remove all 4 bolts that keep the roller in place (see Figure 3-60).

Figure 3-60 Removing all 4 bolts



4 b. Remove the roller assembly and replace it with a new one.

4 c. Put back all 4 bolts in their respective holes before tightening them up.

5. Remove the right-hand side bottom roller and replace it by repeating Step 4.
6. Run full cycle to check for proper operation.

Replacing Top Roller Assemblies

NOTE: This task must be performed by 2 people.

To replace the top roller assemblies, apply the following procedure:

1. Once you have replaced the bottom rollers (see above procedure), start the engine and engage the hydraulic pump.
2. Extend the packer until the top rollers are at the same height as the bottom rollers were in the previous procedure.
3. Lock out and tag out the vehicle (see *Locking Out and Tagging Out the Vehicle* on page 12).
4. Replace both top rollers (one at a time):

   4 a. Using a 5/16-inch Allen wrench and a 3/4-inch box, remove all 4 bolts that keep the roller in place (see Figure 3-60).

   4 b. Remove the roller assembly and replace it with a new one.

   4 c. Put back all 4 bolts in their respective holes before tightening them up.

5. Close back the floating panel.

   In a co-mingle unit: After closing back the floating panel, put back all 4 bolts that secure the panel to the hopper posts. Follow the chute-removing procedure (on page 38) in reverse order to reinstall the chute inside the hopper.

6. Run full cycle to check for proper operation.

Rollers

If the roller itself has to be replaced because of wear, apply the following procedure:

1. Once the roller has been removed from the follower panel (see *Follower Panel Roller Assemblies* on page 65), remove the external snap ring.

Figure 3-61 Removing external snap ring



2. Remove the washer.

Figure 3-62 Removing washer



3. Slide out the roller.
4. Reverse the previous steps to reinstall the roller.

Body Hoist Cylinder

Because it is frequently used, the body hoist cylinder needs to be inspected to ensure proper operation at all times.

Figure 3-63 Body hoist cylinder

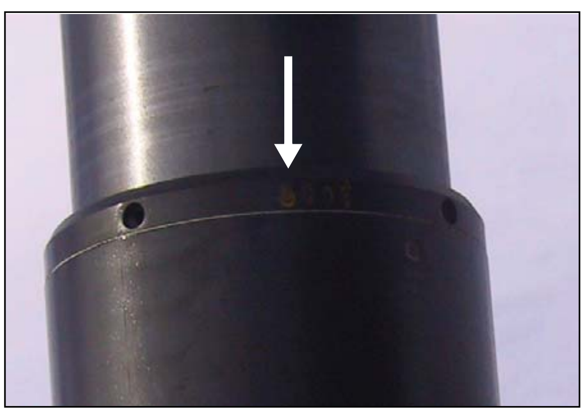


Inspecting Body Hoist Cylinder

The body hoist cylinder should be visually inspected every week as part of regular maintenance.

Check for leaks, cracks and loose parts that could cause failure. When the body is raised, you will see a steel gland at the top of each cylinder section. They must be inspected as well.

Figure 3-64 Cylinder gland



To inspect the body hoist cylinder:

1. Park the vehicle on safe, level ground, and check the overhead clearance.
2. Fully raise the body and set the body safety prop (see *Setting the Body Safety Prop* on page 15).
3. Lock out and tag out the vehicle (see *Locking Out and Tagging Out the Vehicle* on page 12).
4. Check the cylinder for scratches or leaks, and make sure that the pivots at the base of the cylinder are greased and that the bolts are tight.

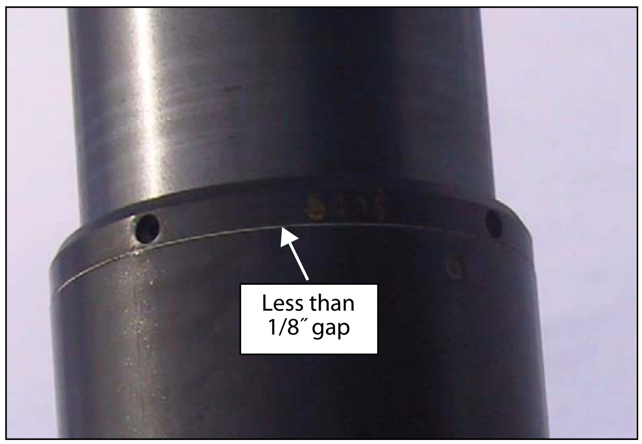
5. Check the gland on each cylinder section.

If the gap between the gland and the tube is wider than 1/8 inch, you must call Labrie*Plus* immediately. Should the gap between the tube and the gland be wider than 1 inch, you must stop using the vehicle immediately and repair the cylinder (see *Replacing Body Hoist Cylinder* on page 70).

Danger!

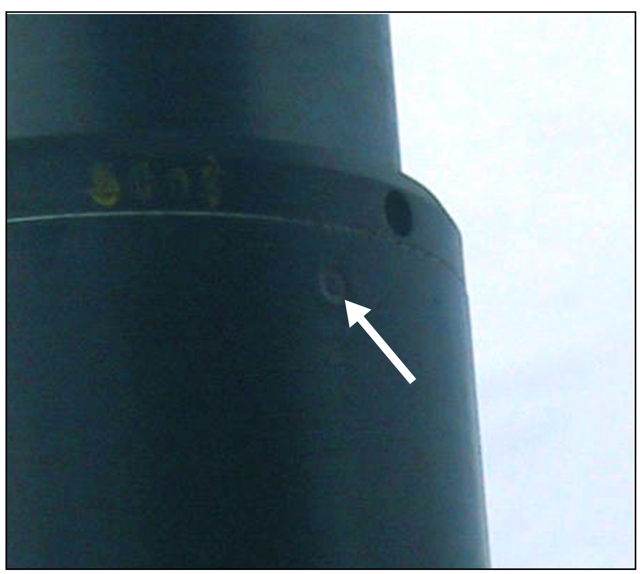
It is mandatory to inspect cylinder gland weekly. If the cylinder gland is unscrewed from the body hoist cylinder, it will cause separation of the hydraulic cylinder, and the body will drop suddenly.
This type of accident can lead to damage, serious injury, and even death.

Figure 3-65 Gap on cylinder section



6. Make sure that the gland safety pins are in place.

Figure 3-66 Safety pin



7. When the inspection is completed, put back the safety prop and lower the body.

Replacing Body Hoist Cylinder

Danger! *Never* prop a loaded body. Unload the body prior to doing any repairs.

To replace the body hoist cylinder:

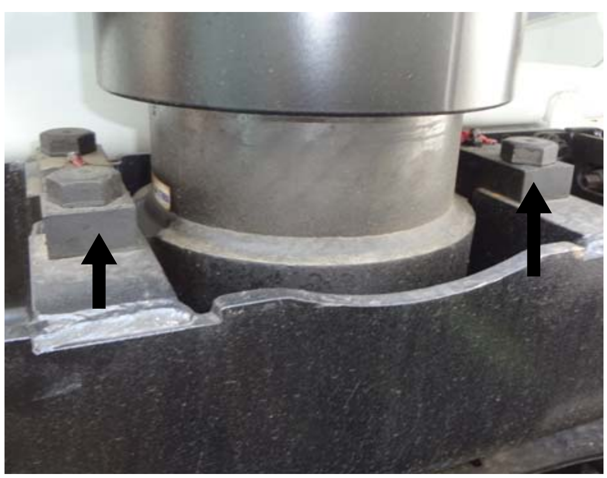
1. Lock out and tag out the vehicle (see *Locking Out and Tagging Out the Vehicle* on page 12).
2. Disconnect the hydraulic hose and fitting.

Figure 3-67 Hydraulic fitting



3. Take off the 2 cylinder base pillow blocks by unscrewing the bolts that hold them in place.

Figure 3-68 Base pillow blocks



4. Remove all 4 bolts that retain the pillow blocks to the cylinder support (see Figure 3-69).
   The pillow blocks will remain in place.

Figure 3-69 Pillow blocks



5. Using a lifting device, lift the body just enough to be able to tilt the safety prop under the body.

   The cylinder will remain in place.

IMPORTANT: Ensure that the cylinder remains in vertical position while lifting the body.

6. Install the safety prop.
7. Lower the body on the safety prop.
8. Using a lifting device, remove the body hoist cylinder carefully.

   Save both pillow blocks for the replacement cylinder (see Figure 3-69).
9. Place the pillow blocks that were set aside on the pins of the new cylinder.
10. Using a lifting device, install the new body hoist cylinder on the base support and reinstall both base pillow blocks.
11. Put back all 4 bolts and tighten them up to hold both base pillow blocks in place (see Figure 3-68).
12. Using a lifting device, extend the cylinder in order to fix it properly to the body.

IMPORTANT: Removing the plug on the top of the cylinder before extending it is required to avoid a vacuum.

Figure 3-70 **Securing cylinder to support**



The pillow blocks that are attached to the cylinder must be correctly positioned to allow insertion of the bolts through the support threaded holes (see Figure 3-70).

13. Put back the 4 bolts and tighten them up to properly secure the cylinder to the support on the body front.
14. Reconnect the hydraulic hose atop the cylinder (see Figure 3-67).
15. Lubricate all cylinder grease fittings.

Figure 3-71 **Grease fittings**



16. Start the truck and engage the pump.
17. Slowly operate the body raise function.

    Raise the body just enough to be able to move the safety prop.
18. Move the safety prop back to its storage position.
19. Check for proper operation.

    Cycle the cylinder approximately 5 times to remove air.

Tailgate Seals and Hinges

Tailgate hinge pins must not show any sign of wear or metal fatigue. The retaining bolts must be kept tight. The tailgate rubber seal must not show *any* signs of damage. Replace if necessary.

Figure 3-72   Rubber seal



Chute (Co-Mingle Vehicles)

A mobile chute, located in the middle of the hopper, diverts waste on either side of the hopper. It is controlled from the cab via two push-buttons on top of the joystick. The chute must be inspected and lubricated on a daily basis.

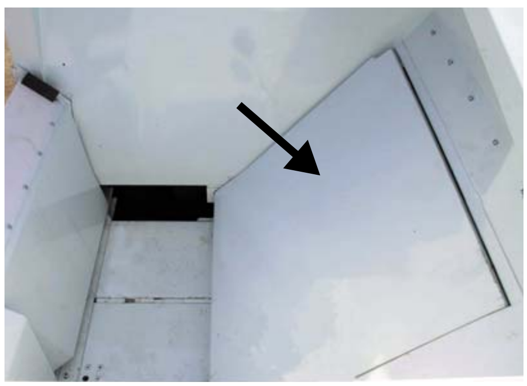
Inspecting the Chute

To inspect the chute, apply the following procedure:

1. Start the engine and engage the hydraulic pump.
2. Move the chute towards the left side of the hopper.

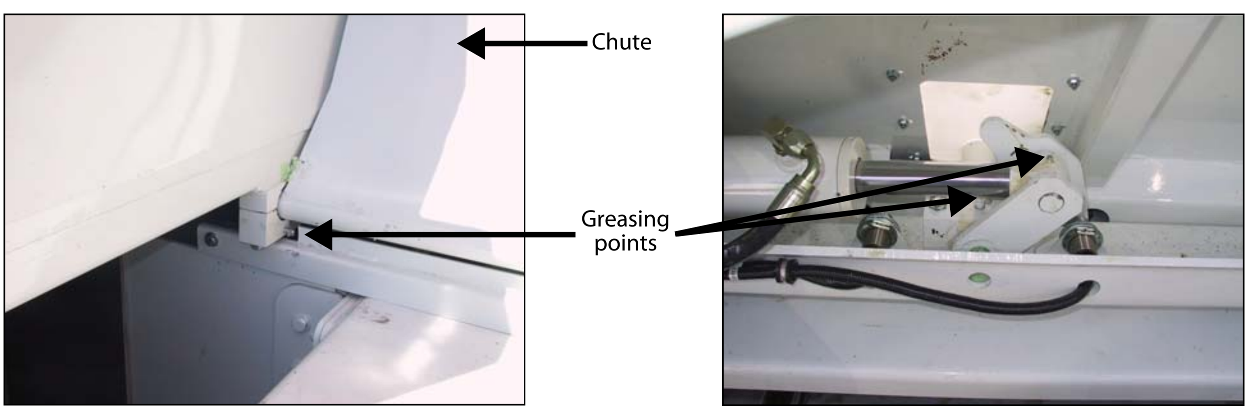
   If not already done, lower the grabber before attempting to move the chute.

Figure 3-73 Chute inside the hopper



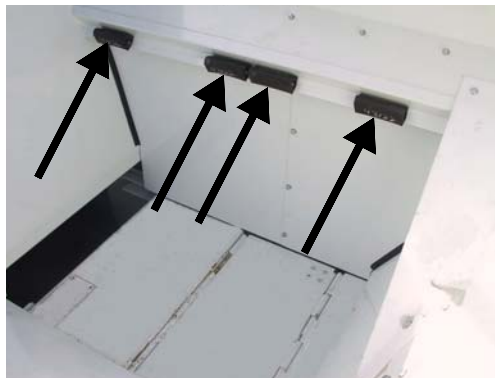
3. Turn OFF both the hydraulic pump and the engine.
4. Lock out and tag out the vehicle (see *Locking Out and Tagging Out the Vehicle* on page 12).
5. Enter the hopper using the stepladder.
6. Lubricate the chute pivot point and the cylinder that controls the chute (for more information, see *Recommended Lubricants* on page 99).
7. Exit the hopper and go between the body and cab to lubricate the chute cylinder and front pivot.

Figure 3-74 Greasing points (chute, left), (cylinder, right)



8. Start the engine and engage the hydraulic pump.
9. Move the chute towards the right side of the hopper.
10. Disengage the hydraulic pump and stop the engine.
11. Lock out and tag out the vehicle (see *Locking Out and Tagging Out the Vehicle* on page 12).
12. Inspect the rubber bumpers inside the hopper. Replace if necessary.

Figure 3-75 Rubber bumpers



13. Exit the hopper and slide the stepladder back (or fold it back) into closed position.

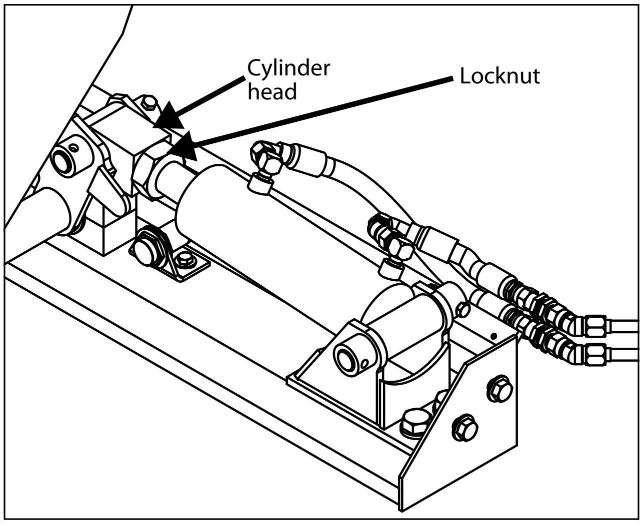
Adjusting Chute Cylinder

When performing inspection inside the hopper, check if the chute rests on all rubber bumpers. The cylinder that controls the chute can be adjusted so that the chute rests properly on the rubber bumpers.

To adjust the chute cylinder:

1. Start the engine and engage the hydraulic pump.
2. Move the chute towards the left side of the hopper.
3. Fully extend the packer.
4. Turn OFF both the hydraulic pump and the engine.
5. Lock out and tag out the vehicle (see *Locking Out and Tagging Out the Vehicle* on page 12).
6. Access the chute cylinder from behind the cab and remove the chute pin.
7. Loosen the cylinder locknut.

Figure 3-76 Cylinder head and locknut



8. Turn the cylinder head clockwise or counterclockwise depending on the adjustment required.

   Turning it clockwise reduces the length of the cylinder rod, and turning it counterclockwise extends the rod. Make only half a turn at a time.

9. Tighten back the cylinder locknut.

10. Put the chute pin back and test the chute.

    When testing, the chute must not slam on the rubber bumpers.

Proximity and Limit Switches

Proximity and limit switches act as remote electrical on/off switches and must be adjusted properly.

Warning

Proximity and limit switches must function properly. Serious damage to the equipment, injuries or death may occur if you operate the machinery with improperly adjusted switches.

Figure 3-77 and Figure 3-78 show where the proximity/limit switches are located on the truck.

Figure 3-77 Switches on the street side of the body

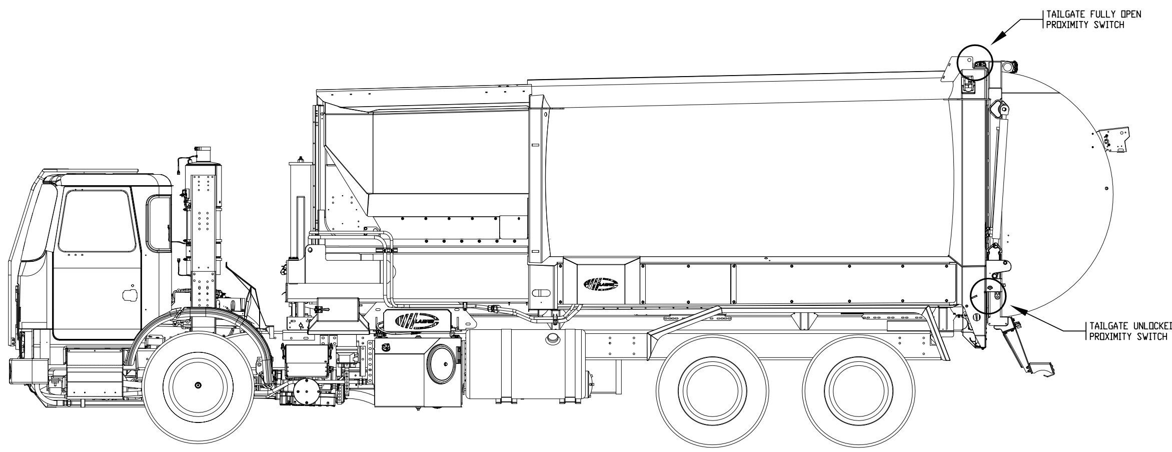
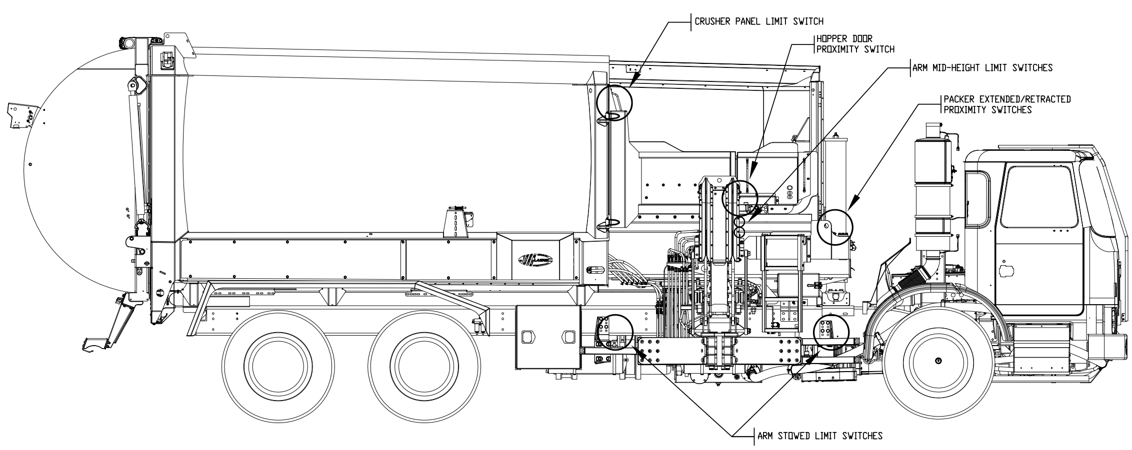
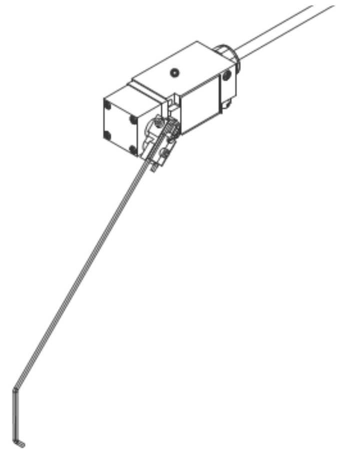


Figure 3-78 Switches on the curb side of the body



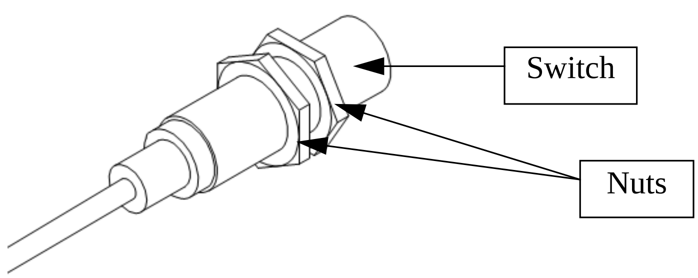
Limit Switch Adjustment



To adjust the limit switch:

1. Loosen the limit switch nut.
2. Move the lever arm to the approximate position where the switch is to be triggered.
3. Tighten up the nut.
4. To fine tune the adjustment, loosen the nut slightly.
5. With a flathead screwdriver, turn the adjusting screw located at the center of the nut until a click is heard.
6. Tighten up the nut.
7. Test the operation.
8. If necessary, repeat steps 1 through 7.

Proximity Switch Adjustment



To adjust the proximity switch:

1. Loosen the proximity switch nuts.
2. Adjust the proximity switch so that there is a gap of approximately 3/16 inch (4.8 mm) between the plate (target) and the switch.
3. Tighten up the nuts.
4. Test the operation.

The proximity switch light should turn on when the target is detected; if not, repeat the adjustment procedure.

Adjusting Packer Extend Proximity Switch

Danger! Always lock out and tag out the vehicle during inspection and maintenance (see *Locking Out and Tagging Out the Vehicle* on page 12).

Packer proximity switches were adjusted at the factory for optimal packer operation. If the area behind the packer is not properly cleaned *daily,* proximity switches may no longer stop the packer, creating a knocking noise when the packer reaches the end of a stroke (bottoming out). The packer may also not retract far enough to trigger the proximity switch, preventing automatic cycles from working properly.

Furthermore, over time, misalignment of the components may occur due to the frequent back and forth motion of the packer. An adjustment might be necessary to prevent cylinders from completely extending and retracting to the end of their strokes.

Two proximity switches control the packer range of motion. The proximity switch that stops the packer during extension (packer extend) is located on the front right-hand side of the body corner, to the right of the packer retract proximity switch (see Figure 3-79). The other proximity switch (packer retract) is also located on the front right-hand side of the body corner, to the left of the packer extend proximity switch.

Figure 3-79 Packer extend proximity switch



To verify that the switch needs adjusting, empty all refuse from the body, start a pack cycle and observe the fully extended position of the packer.

If the packer stops before or after reaching the fully extended position, adjust the switch as follows:

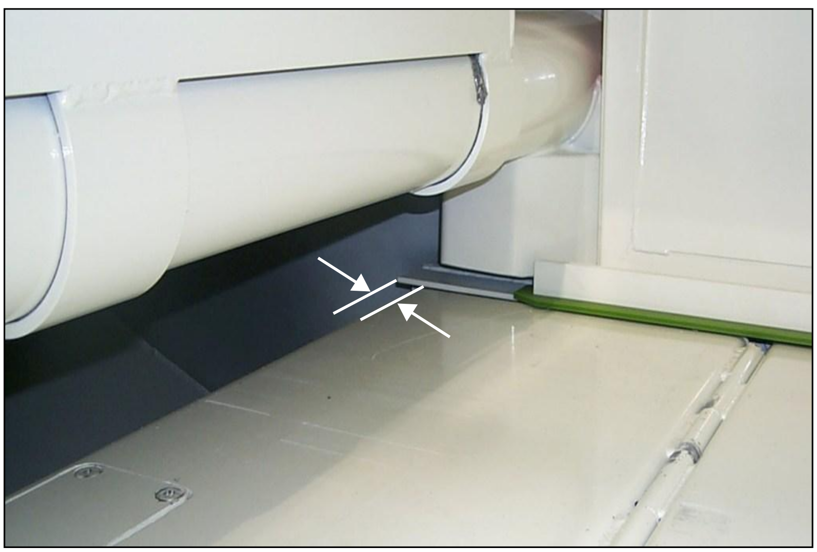
Important This procedure must be performed by two people.

To adjust the packer extend proximity switch:

1. Start the engine and engage the hydraulic pump.
2. Push the green button on the packer control station to extend the packer about one inch from the fully extended position.

Danger! Do not enter the hopper while the packer is moving.

Figure 3-80 Packer at about one inch from fully extended position



3. When the packer reaches the correct position, push the red emergency STOP button.
4. Locate the packer extend proximity switch on the front right-hand side body corner (see Figure 3-79).
5. Loosen both bolts (see Figure 3-81) and adjust the proximity switch so that it gets triggered (its amber light turning on).

   Triggering occurs when the plate (target) is detected by the switch.
6. Tighten back up the bolts.
7. Engage the hydraulic pump and check for proper operation.

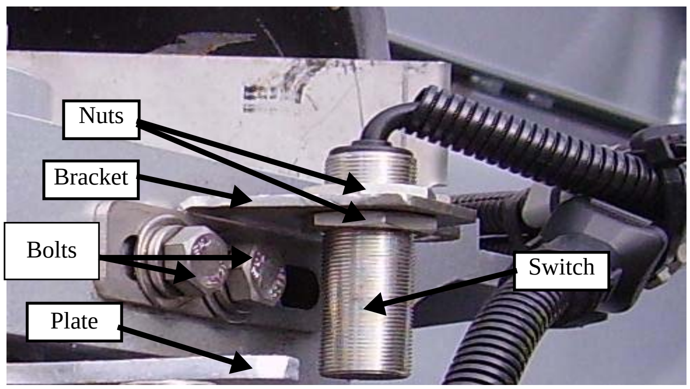
   Make sure that the proximity switch detects the plate properly.

Ideally, there should be a gap of approximately 3/16 inch between the proximity switch and the plate. If this is not the case, apply the following procedure:

To adjust the gap between the proximity switch and the plate:

1. On the proximity switch, loosen the nuts located on each side of the proximity switch bracket (see Figure 3-81).
2. Push or pull the proximity switch until there is a gap of 3/16 inch between the plate and the switch.
3. Tighten up both nuts.
4. Make sure that the proximity switch detects the plate properly.
5. Test the packer for a full cycle.

Figure 3-81 Proximity switch



Adjusting Packer Retract Proximity Switch

Danger! Always lock out and tag out the vehicle during inspection and maintenance (see *Locking Out and Tagging Out the Vehicle* on page 12).

Packer proximity switches were properly adjusted at the factory for optimal packer operation. If the area behind the packer is not properly cleaned *daily*, proximity switches may no longer stop the packer, creating a knocking noise when the packer reaches the end of a stroke (bottoming out). The packer may also not retract far enough to trigger the proximity switch, preventing automatic cycles from working properly.

Also, over time, misalignment of the components may occur due to the frequent back-and-forth movement of the packer. An adjustment might be necessary to prevent cylinders from completely extending and retracting to the end of their strokes.

Two proximity switches control the packer range of motion. Both are located on the front right-hand side of the body corner. The proximity switch that allows lowering of the crusher panel when the packer is in the home position and stops the packer during retraction (packer retract) is located to the left of the packer extend proximity switch (see Figure 3-82).

Figure 3-82 Packer retract proximity switch



To verify that the switch needs adjusting, empty all refuse from the body, start a pack cycle and observe the home position of the packer when it completes its cycle.

If the packer stops before reaching the home position or if the packer cylinders remain pressured up or abruptly bottom out while the packer is at the home position, adjust the switch as follows.

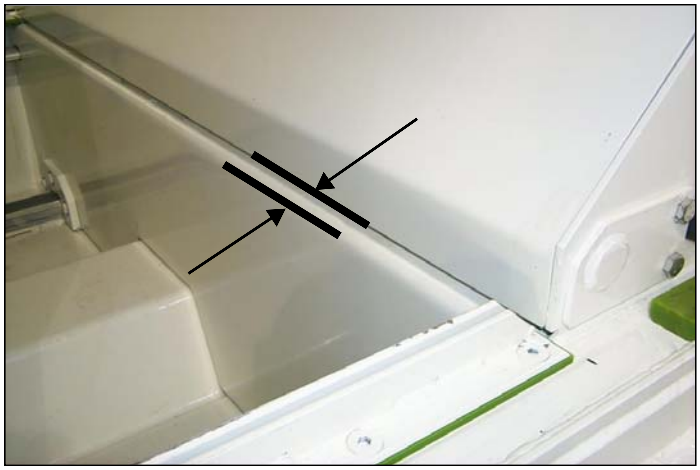
Important This procedure must be performed by two people.

To adjust the packer retract proximity switch:

1. Start the engine and engage the hydraulic pump.
2. Push the yellow button to retract the packer up to 1 inch from the fully retracted position (see Figure 3-83).

Danger! Do not enter the hopper while the packer is moving.

Figure 3-83 Packer retracted about 1 inch from end-of-stroke



3. When the packer reaches the correct position, push the red emergency STOP button.
4. Locate the packer retract proximity switch on the front right-hand side body corner (see Figure 3-82).
5. Loosen both bolts (see Figure 3-84) and adjust the proximity switch so that it gets triggered (its amber light turning on).

   Triggering occurs when the plate (target) is detected by the switch.
6. Tighten back up the bolts.
7. Engage the hydraulic pump and check for proper operation.

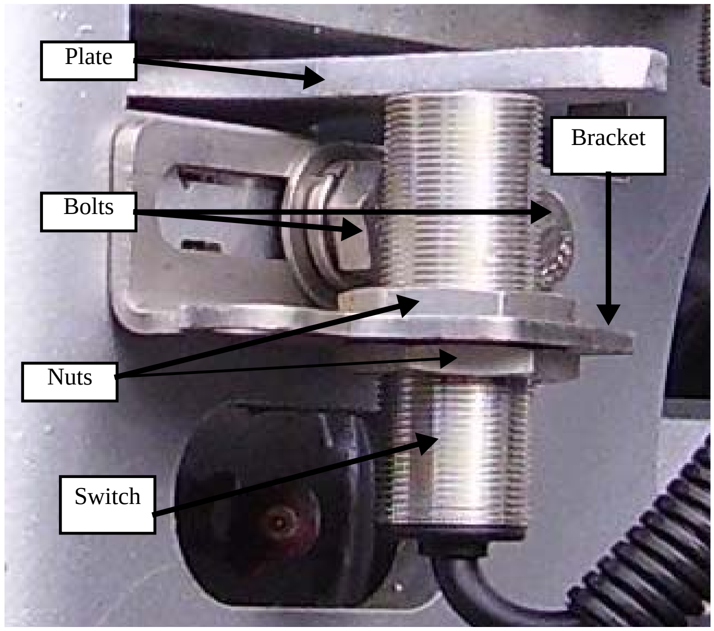
   Make sure that the proximity switch detects the plate properly.

Ideally, there should be a gap of approximately 3/16 inch between the proximity switch and the plate. If this is not the case, apply the following procedure:

To adjust the gap between the proximity switch and the plate:

1. On the proximity switch, loosen the nuts located on each side of the proximity switch bracket (Figure 3-84).
2. Push or pull the proximity switch until there is a gap of 3/16 inch between the plate and the switch.
3. Tighten up both nuts.
4. Make sure that the proximity switch detects the plate properly.
5. Test the packer for a full cycle.

Figure 3-84 Proximity switch



Adjusting Body-Raised Limit Switch

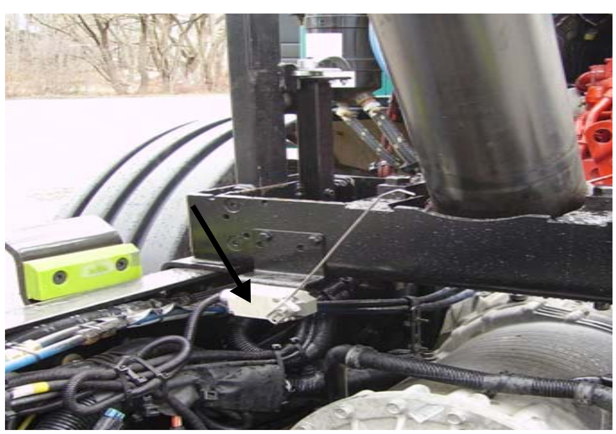
Danger!



Always lock out and tag out the vehicle during inspection and maintenance (see *Locking Out and Tagging Out the Vehicle* on page 12).

A limit switch located on the vehicle chassis near the body hoist cylinder activates the backup alarm and a warning buzzer, and turns on a warning light inside the cab as soon as the body is raised to a certain height from the chassis. It can also be combined with different interlocks, such as air suspension and tag axle interlocks. Adjust this limit switch accordingly if needed (see procedure below).

Figure 3-85 Body-raised limit switch



This safety feature is provided to warn people around that the vehicle is in the process of being unloaded and to remind the operator that the body is still raised.

To adjust the body raised limit switch:

1. Loosen the limit switch nut.
2. Move the body to the approximate position where the switch is to be triggered. The warning buzzer shall sound as soon as the body has reached a certain height above the chassis (usually about 12 inches above the chassis).
3. Tighten the nut.
4. To fine tune the adjustment, loosen the nut slightly.
5. With a flathead screwdriver, turn the adjusting screw located at the center of the nut until a click is heard.
6. Tighten the nut.
7. Test the operation.
8. If necessary, repeat steps 1 through 7.

Adjusting Tailgate Unlocked Proximity Switch

Warning! Ensure that no one is standing behind or near the tailgate when performing this procedure.

AUTOMIZER™ vehicles are equipped with a tailgate unlocked proximity switch on the tailgate left side near the upper end of the tailgate cylinder (see Figure 3-86) [one on each side of the tailgate in co-mingle units]. This switch gets triggered (amber light lights up) when the cylinder casing is sufficiently near the switch head. This occurs when the cylinder is fully retracted.

When the tailgate is unlocked/open, the tailgate cylinder is partially/fully extended and no triggering of the proximity switch occurs; the cylinder having moved downward away from the switch[1]. This activates the backup alarm and a warning buzzer inside the cab. This also turns on the TAILGATE UNLOCKED warning light in the cab and disables packing.

When the tailgate is closed/locked, the tailgate cylinder is fully retracted and triggering of the proximity switch occurs; the cylinder having moved upward toward the switch[2]. When the switch is triggered, the warning buzzer and backup alarm stop sounding, the TAILGATE UNLOCKED warning light turns off and packing operation can resume.

However, some troubles may occur if the tailgate unlocked proximity switch is out of adjustment. For example, the tailgate is locked but the in-cab buzzer is still sounding or the TAILGATE UNLOCKED warning light is off while the tailgate is still open. In such cases, adjusting the tailgate unlocked proximity switch is required.

---

1. **The first thing the tailgate cylinder does when the operator presses and holds the TAILGATE UP switch is to unlock the tailgate, resulting in the cylinder head moving away from the proximity switch, thus making triggering no more possible.**
2. **The last thing the tailgate cylinder does when the operator presses and holds the TAILGATE DOWN switch is to lock the tailgate, resulting in the cylinder head moving closer to the proximity switch, thus making triggering possible.**

Figure 3-86 Location of tailgate unlocked proximity switch

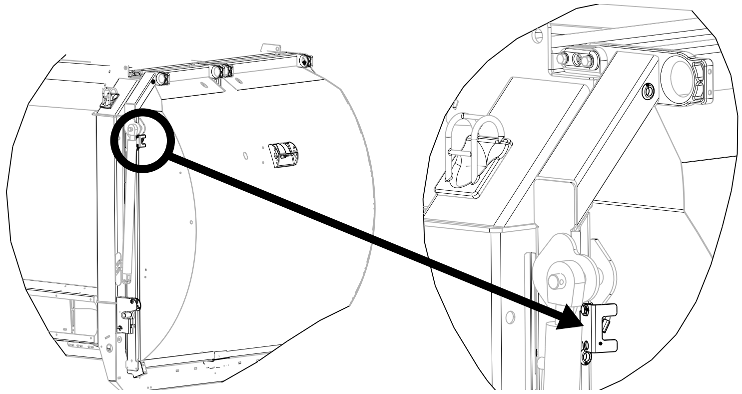
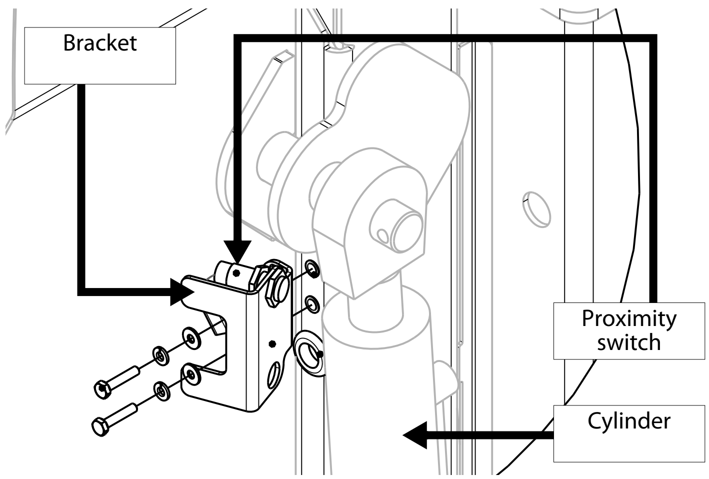


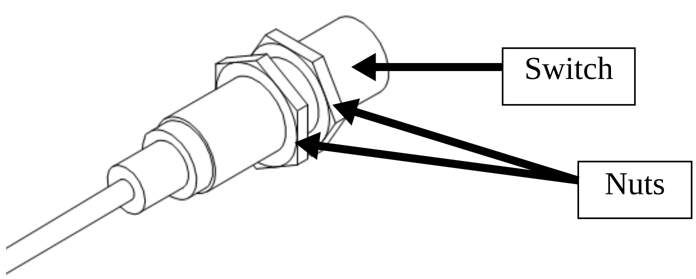
Figure 3-87 Proximity switch support assembly



To adjust the tailgate unlocked proximity switch:

1. Loosen the nuts on each side of the proximity switch bracket (see Figure 3-88).

Figure 3-88 Proximity switch



2. Adjust the proximity switch so that the switch can be triggered by the cylinder casing as the cylinder head moves upward. There should be a gap of approximately 3/16 inch between the cylinder casing and the switch.
3. Tighten back up both nuts.

4. Open the tailgate using the TAILGATE UP switch on the in-cab control panel and listen if the warning buzzer and backup alarm start sounding after you press the switch.
5. Repeat the procedure if need be.

Adjusting Tailgate Fully Open Proximity Switch (optional)

The tailgate fully open proximity switch (see Figure 3-89) allows the operator to raise the body when the tailgate is fully open.

This switch is present only when required by different interlocks such as the single ICC bumper interlock for dual tailgates.

Figure 3-89 Tailgate fully open proximity switch



This switch is on the body street side near the tailgate hinge.

To adjust the tailgate fully open proximity switch:

1. Fully open the tailgate.
2. Adjust the switch so that it detects the target.

   If detection is achieved, the BODY RAISE ALLOWED warning light turns on.
3. Slightly close the tailgate to about an inch.

   The proximity switch should not now detect the target and the BODY RAISE ALLOWED warning light should go out.
4. Repeat the procedure until the proximity switch is properly adjusted.

Adjusting Hopper Door Proximity Switch

This proximity switch (see Figure 3-90) turns off all hydraulic power when the hopper door is not closed.

Figure 3-90 Hopper door proximity switch



This switch is located on the lower side door frame.

To verify that the switch needs adjusting, open the side access door by approximately 2 inches (5 cm) and try to operate any hydraulic function. No hydraulic function should be working.

Warning Injury or death may occur if you attempt to enter the body while the packer or arm is in operation.

To adjust the hopper door proximity switch:

1. Loosen the proximity switch nuts.
2. Adjust the proximity switch so that there is a gap of approximately 3/16 inch (5 mm) between the plate and the switch.
3. Tighten back up the nuts.
4. Test the operation.

   The proximity switch light should turn on when the target is detected; if not, repeat the adjustment procedure.

NOTE: The automated arm must be extended in order to open the hopper door and do the test.

Adjusting Crusher Panel Up Limit Switch (optional)

The crusher panel up limit switch (see Figure 3-91) disables the arm operation when the crusher panel is not in its stowed position and redirects the arm power to the crusher panel up function when the deadman switch on the arm joystick is activated. This forces the crusher panel to rise to the up position in order to let the arm works.

Figure 3-91 Crusher panel up limit switch



This switch is located behind the crusher panel itself.

NOTE: The crusher panel has to be lowered to access this limit switch.

To adjust the crusher panel up limit switch:

1. Lower the crusher panel using the CRUSHER PANEL DOWN switch on the in-cab control panel.
2. Turn OFF both the hydraulic pump and the engine.
3. Lock out and tag out the vehicle (see *Locking Out and Tagging Out the Vehicle* on page 12).
4. Enter the hopper.
5. Adjust the crusher panel up limit switch so that it is triggered when the crusher panel is in the up position.
6. Exit the hopper and enter the cab.
7. Start the truck and engage the hydraulic pump.
8. Fully raise the crusher panel using the CRUSHER PANEL UP switch on the in-cab control panel.
9. Using the joystick, try to move the automated arm.

   The arm should move.

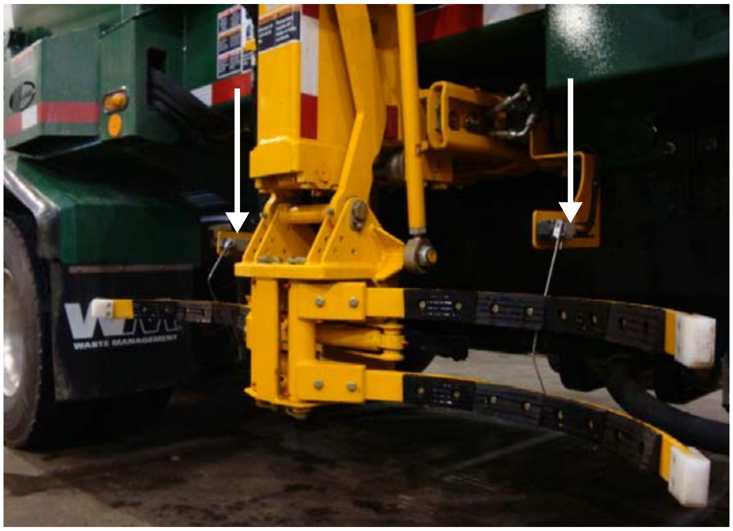
NOTE: Do not forget to depress the deadman switch on the joystick to activate joystick functions.

10. If the arm does not move, repeat the procedure until the limit switch is properly adjusted.

    The rod of the switch must touch the crusher panel when the panel is fully raised.

Adjusting Arm Stowed Limit Switches (2)

The arm stowed limit switches illuminate the ARM OUT warning lights in the dashboard when the operator extends the arm or closes the gripper. If these limit switches are misaligned, the warning lights on the dashboard may continue to flash even if the gripper is fully open and the arm fully retracted. The arm stowed limit switches also activate an audible alarm when the arm is out and the vehicle speed is greater than about 3 mph (5 km/h).

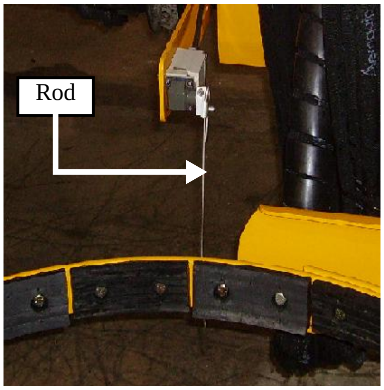


These limit switches are located behind each of the gripper fingers (one for each finger).

To adjust the arm stowed limit switches:

1. Park the vehicle on safe, level ground.
2. Fully open the gripper and retract the arm alongside the body.
3. Adjust both limit switches in such a way that the ARM OUT warning lights stop flashing when the gripper is fully open and the arm is fully retracted. To do this:
   - **3 a.** Loosen the limit switch nut.
   - **3 b.** Adjust the rod so that the gripper finger will trigger the limit switch (click sound) and turn off the warning lights.

     For the ARM OUT warning lights to stop flashing, both limit switches may require to be adjusted.



3 c. Tighten back up the nut.

4. Slightly close the gripper or extend the arm out (about 1 inch). The ARM OUT warning lights should start flashing.
5. Repeat the procedure until the limit switches are properly adjusted.

Danger! All limit switches MUST be working at all times. Otherwise, the operator may not be aware that the arm is not fully retracted or that the gripper is open or closed. This may cause accidents, injuries and/or property damage.

Caution! This procedure must be done correctly before adjusting the gripper auto-closing system.

Adjusting Arm Mid-Height Limit Switches (2)

The two arm mid-height limit switches have two functions:

- The lower switch allows the gripper to open when the arm is lower than the mid-height sensor and activates the gripper automatic close function (gripper auto-close) when arm is higher than the sensor.
- The higher switch is used as a trigger for the camera auto-switching function when there are cameras on the right-hand wall and inside the hopper.



The arm mid-height limit switches are located on the front side of the arm.

These limit switches do not really need any adjustment other than the target itself. If they ever need adjustment, adjust the target so that the limit switch levers come in contact with the target when the arm rises. The length of the roller levers can also be adjusted for more precision.

Figure 3-92 Roller lever



Adjusting Tailgate Hooks (Co-Mingle Vehicles)

Co-mingle vehicles have 2 tailgates that can move independently of one another. Under each tailgate a hook is provided to lock the tailgate and seal the body. Each hook needs to be greased weekly.

When closing both tailgates, the bottom seals of each tailgate must be pressed firmly against the body to prevent any spillage when the body is full.

To adjust the tension of both tailgate hooks, apply the following procedure:

NOTE: These hooks must be adjusted separately. Proceed with the adjustment of any of the 2 tailgate hooks, then with the adjustment of the other one.

1. Start the engine and engage the hydraulic pump.

2. Raise the tailgate about 3 feet (enough to move the safety prop freely).

Danger!

Prior to raising the tailgate, make sure that no one is standing behind the vehicle and that the body is empty.

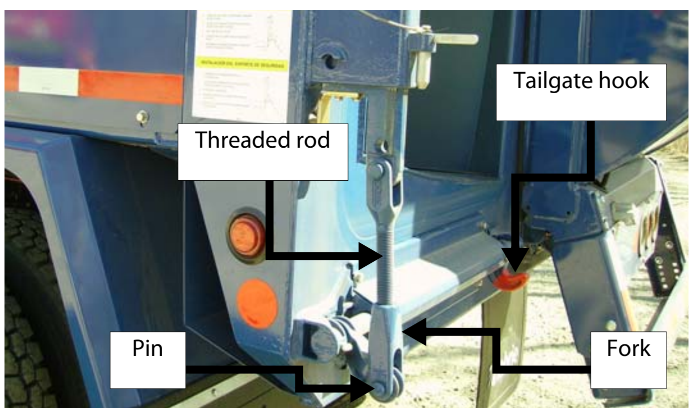
3. Pull the safety prop upward and set it down (see Figure 2-11).

Danger!

The safety prop shall be set each time the tailgate is opened for inspection and maintenance purposes.

4. Lower the tailgate onto the safety prop.
5. Remove the fork-mounted pin below the threaded rod (see Figure 3-93).
   Take the cotter pin off first in order to remove the pin.
6. Using an appropriate tool, turn the fork (see Figure 3-93) clockwise to increase tension or counter-clockwise to reduce tension.

Figure 3-93 Tailgate hook



7. Once completed, put back both the pin and the cotter pin.
   Fork must be positioned correctly to allow insertion of the pin.
8. Raise the tailgate by about 3 feet.
9. Tilt the safety prop toward the back of the body (see Figure 2-12).
10. Release your grip on the safety prop to set it in its home position (see Figure 2-13).
11. Close the tailgate completely.
12. Test for proper operation.
13. If need be, proceed with the adjustment of the other tailgate hook by repeating steps 2 to 12.

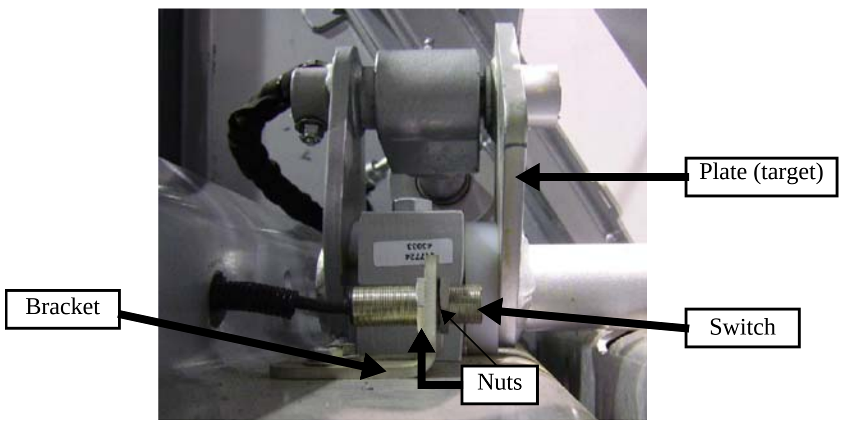
Adjusting Chute Proximity Switch Gaps (Co-Mingle Vehicles)

To ensure that a chute proximity switch is working properly, there must be a 3/16-inch gap between the switch and the target that passes in front of it.

To adjust the gap:

1. Move the chute to the right:
   - 1 a. Start the engine.
   - 1 b. Engage the hydraulic pump.
   - 1 c. Move the chute.
   - 1 d. Disengage the hydraulic pump.
   - 1 e. Stop the engine.
2. On the right-hand side proximity switch, loosen the nuts located on each side of the proximity switch bracket.

Figure 3-94 Chute proximity switch



3. Push or pull the proximity switch until there is a gap between 3/16” and 1/4” between the plate and the switch.
4. Tighten up both nuts.
5. Move the chute to the left:
   - 5 a. Start the engine
   - 5 b. Engage the hydraulic pump
   - 5 c. Move the chute
   - 5 d. Disengage the hydraulic pump
   - 5 e. Stop the engine
6. On the left-hand side proximity switch, loosen the nuts located on each side of the proximity switch bracket.
7. Push or pull the proximity switch until there is a gap between 3/16” and 1/4” between the plate and the switch.
8. Tighten up both nuts.
9. Make sure that the proximity switches detect the plate properly.

Adjusting Chute Proximity Switches (Co-Mingle Vehicles)

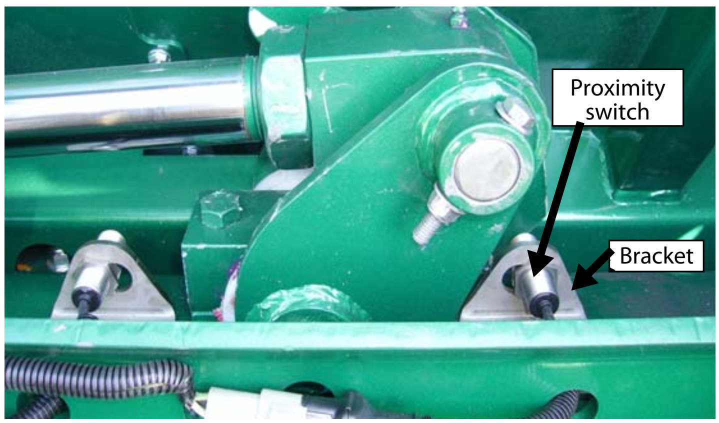
Chute movement has to be stopped at the correct position to prevent garbage from falling between the chute and the hopper wall.

This task is carried out by two proximity switches located near the chute cylinder. One proximity switch, located on the right-hand side, stops chute movement when the chute goes from left to right, and the other stops chute movement when the chute goes from right to left.

To adjust the stroke ends of the chute cylinder:

1. Lock out and tag out the vehicle (see *Locking Out and Tagging Out the Vehicle* on page 12).
2. Loosen the screws of the right-hand side proximity switch bracket.

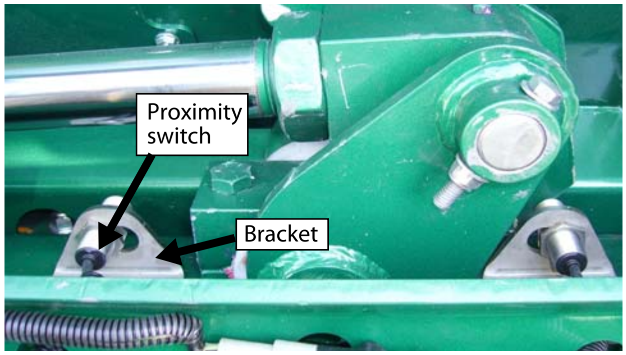
Figure 3-95 Right-hand side proximity switch



3. Move the proximity switch laterally and perform tests until the chute stops at a position that will prevent garbage from falling between the chute and the hopper wall.

   In the cab, make sure that the corresponding indicator lights up.
4. Tighten up both screws.
5. Perform tests to make sure that there is no space between the chute and the hopper wall when the chute is on the right-hand side (for more information on performing these tests, see *Adjusting Chute Proximity Switch Gaps (Co-Mingle Vehicles)* on page 94). It is also important to make sure that the proximity switch reaches its target and that the position indicator of the chute lights up.
6. Once the right-hand side proximity switch is adjusted properly, loosen the screws of the left-hand side proximity switch bracket.

Figure 3-96 Left-hand side proximity switch



7. Move the proximity switch laterally and perform tests until the chute stops at a position that will prevent garbage from falling between the chute and the hopper wall.

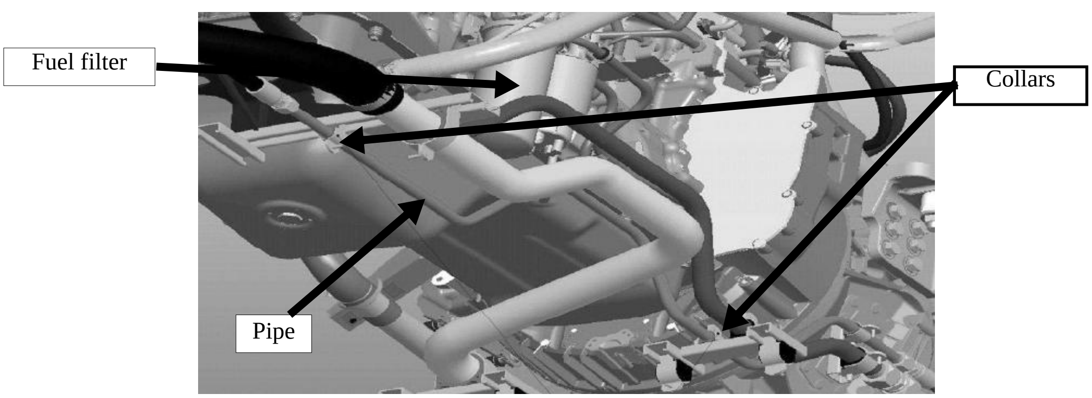
   In the cab, make sure that the corresponding indicator lights up.
8. Tighten up both screws.
9. Perform a test to make sure that there is no space between the chute and the hopper wall when the chute is on the left-hand side (for more information on performing these tests, see *Adjusting Chute Proximity Switch Gaps (Co-Mingle Vehicles)* on page 94).

Fuel Filter Replacement

Fuel filter needs to be replaced periodically according to manufacturer's specifications. If your AUTOMIZER™ unit is a Mack LEU, special procedure must be followed to change the fuel filter.

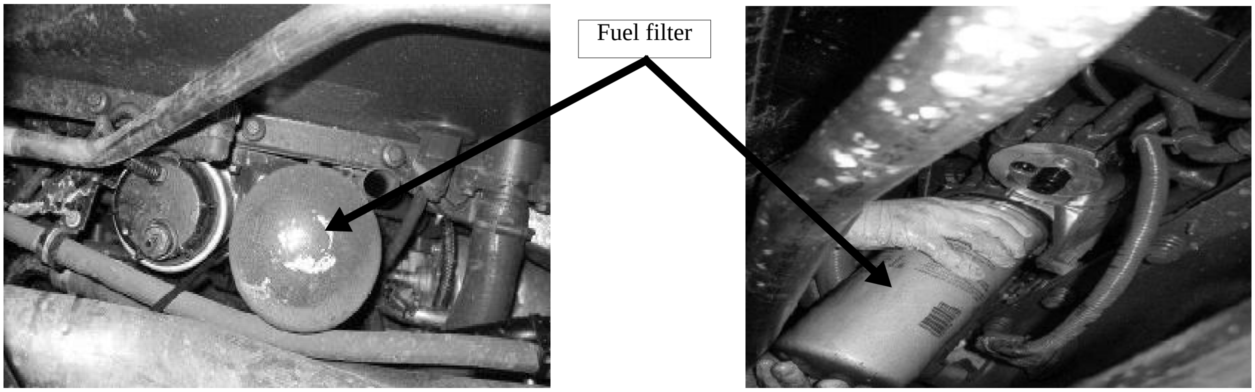
To change the fuel filter of your AUTOMIZER™ unit with a Mack LEU chassis, do the following:

1. Unclip the pipe from the collars.



2. Move the pipe close to the oil pan for more working space.
3. Proceed with the replacement of the fuel filter.

NOTE: Always follow your chassis manufacturer's recommendations regarding fuel filter replacement.



4. After installing the fuel filter, move back the pipe to its original place.
5. Clip the pipe on the collars.

IMPORTANT: To prevent air from getting into the system, make sure the fuel filter that you install is full of fuel.

Painting and Finishing

Type of surface finishing and painting finishing recommended:

- SURFACE PREPARATION
  Grit blasting (#50) or sandblasting (#80) for a 1.4 to 2.4-mil deep profile.
- PRIMARY COAT:
  Dupont Black Urethane Primer #373p27678 to get a minimum thickness of 2 mils (dry).
- FINISHING COAT:
  Dupont Emron Elite Paint 2-mil-deep single coat (dry).

At the end of the painting process, the product must have a minimum of 4-mil surface thickness.

4

Lubrication

To help the various systems of your truck run smoothly and extend the life time of the many critical parts that affect performance, there is one thing that you must do and that is:

LUBRICATE, LUBRICATE AND LUBRICATE!

Insufficient lubrication is a major cause of component failure on all refuse vehicles. The AUTOMIZER™, like most equipment, has many points that require grease.

See the following sections for detailed lubrication points on packer, cylinder pins, hopper door hinges and body-chassis hinges.

Also, refer to the lubrication chart located on the side of the vehicle for a complete list of lube locations and the frequency with which they should be greased.

Recommended Lubricants

You will find below the recommended types of lubricants.

Grease

Any lithium-based commercial multipurpose grease may be used.

Hydraulic Oil

Minimum requirements for hydraulic oil:

- Any ISO Grade 32 hydraulic oil. This type of hydraulic oil provides excellent wide temperature range working condition.
- Viscosity of 32.0 cSt at 104 °F (40 °C).
- Viscosity index: 145 minimum.
- Pour point: -40 °C.
- The oil must contain anti-wear and anti-foam additives, rust and oxidation neutralizers and self-protecting agents.
- It must also meet MIL-H-5606 or SAE IOW “MS” standards.
- Finally, it must be absolutely clean and free of contaminants.

Any hydraulic oil that possesses such properties may be used in the AUTOMIZER™. For northern regions, a hydraulic oil specific to these regions is strongly recommended.

IMPORTANT: It is the customer's responsibility to use oil that is appropriate to the climate.

Caution!

Do not mix different brands of oil. In doubt, drain and refill with new oil.

Engine Oil

Refer to the engine manufacturer's maintenance manual for recommended type of engine oil.

Transmission Oil

Refer to the transmission manufacturer's maintenance manual for recommended type of transmission oil.

Testing Hydraulic Oil

It is recommended to have hydraulic oil tested and analyzed by a lab to prevent hydraulic system or pump failures. This will also optimize the oil change frequency. Apply the following procedure to take oil samples on Labrie vehicles.

NOTE: The procedure may differ from other laboratories sample kits.

Caution!

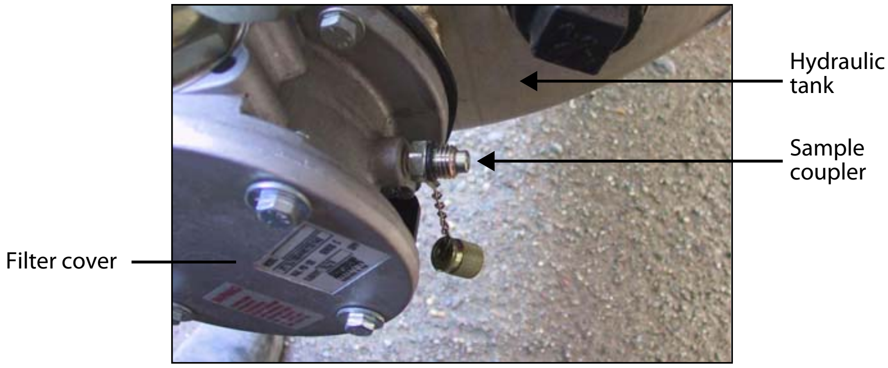
Highly contaminated hydraulic fluid must be changed promptly to avoid any damage in the hydraulic system.

Hydraulic Oil Sample Preparation

Before taking hydraulic oil samples:

1. Apply all safety measures to ensure safety around the vehicle at all times.
2. Start the engine and engage the hydraulic pump.
3. Raise the body.
4. Install the body safety prop and lower the body onto it.
5. Disengage the pump and turn off the engine.
6. Locate the oil sample coupler along the right-hand side chassis frame rail. It is located behind the filter cover (see Figure 4-1).

Figure 4-1 Oil sample coupler



7. Remove the cap from the sample coupler and clean the coupler with a clean rag.
8. Push on the coupler spring ball (see Figure 4-2) using a small tip to purge oil before taking a sample. The residual pressure in the system will push the oil out of the coupler. Use a small container to recuperate the oil that will come out. Let the oil leak for a few seconds (about half a cup). In this operation, the pump must be engaged.

Figure 4-2 Spring ball



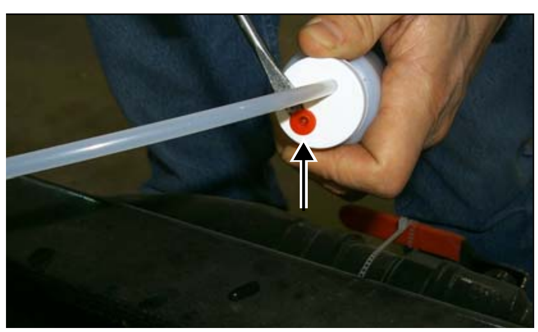
Taking an Oil Sample

Once you have released the residual pressure, you can take the sample.

To do so:

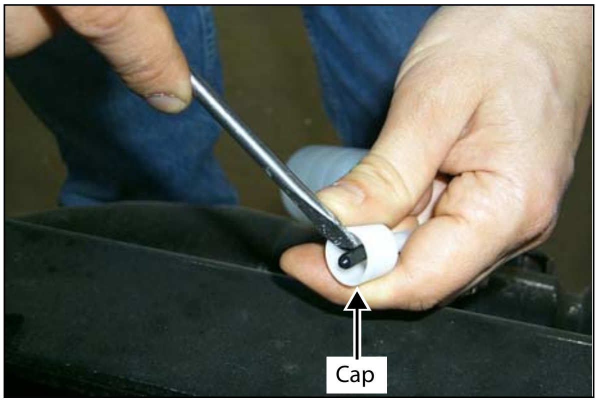
1. Remove the sample kit from its bag and, using a screwdriver, remove the vent cap from the bottle cap (see Figure 4-3).

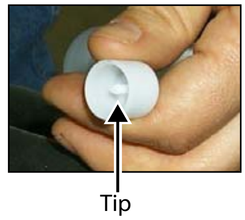
Figure 4-3 Vent cap



2. Remove the protective cap from the probe.

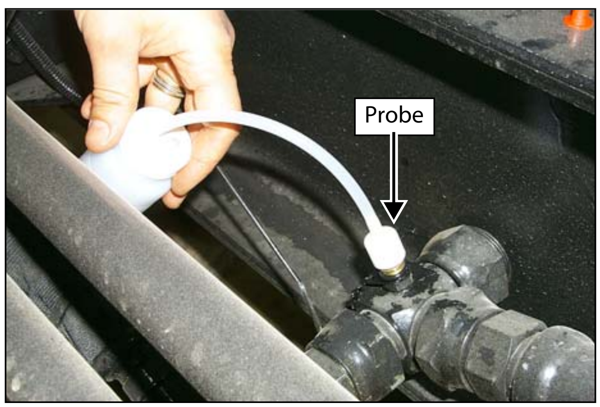
Figure 4-4 Probe cap and tip





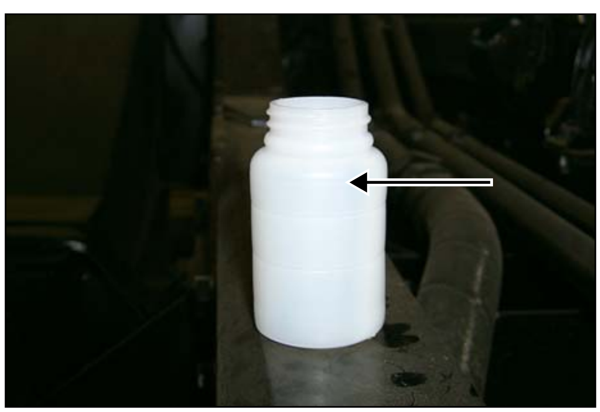
3. Install the probe on the coupler to fill the sample bottle. Use an EMA coupler with M16×2.0 threads.

Figure 4-5 Installing probe on coupler



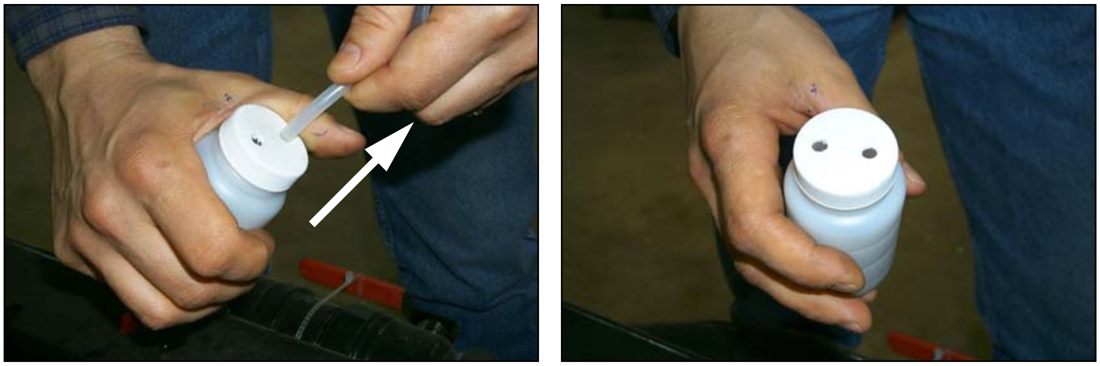
4. Fill the bottle to the level mark (the pump must be engaged to do this). Remove excess oil through the vent. *DO NOT OPEN THE BOTTLE!*

Figure 4-6 Recommended oil level



5. Once the sample is taken, remove the probe from the coupler and pull out the probe to remove it from the bottle (see Figure 4-7).

Figure 4-7 Pulling out probe from bottle



6. Put the seal cover over the bottle cap.

Figure 4-8 Sealing bottle



Sealed sample

7. Fill in the identification form (sticker) and apply it on the sample bottle (see Figure 4-9).

Figure 4-9 Identification form (sticker)



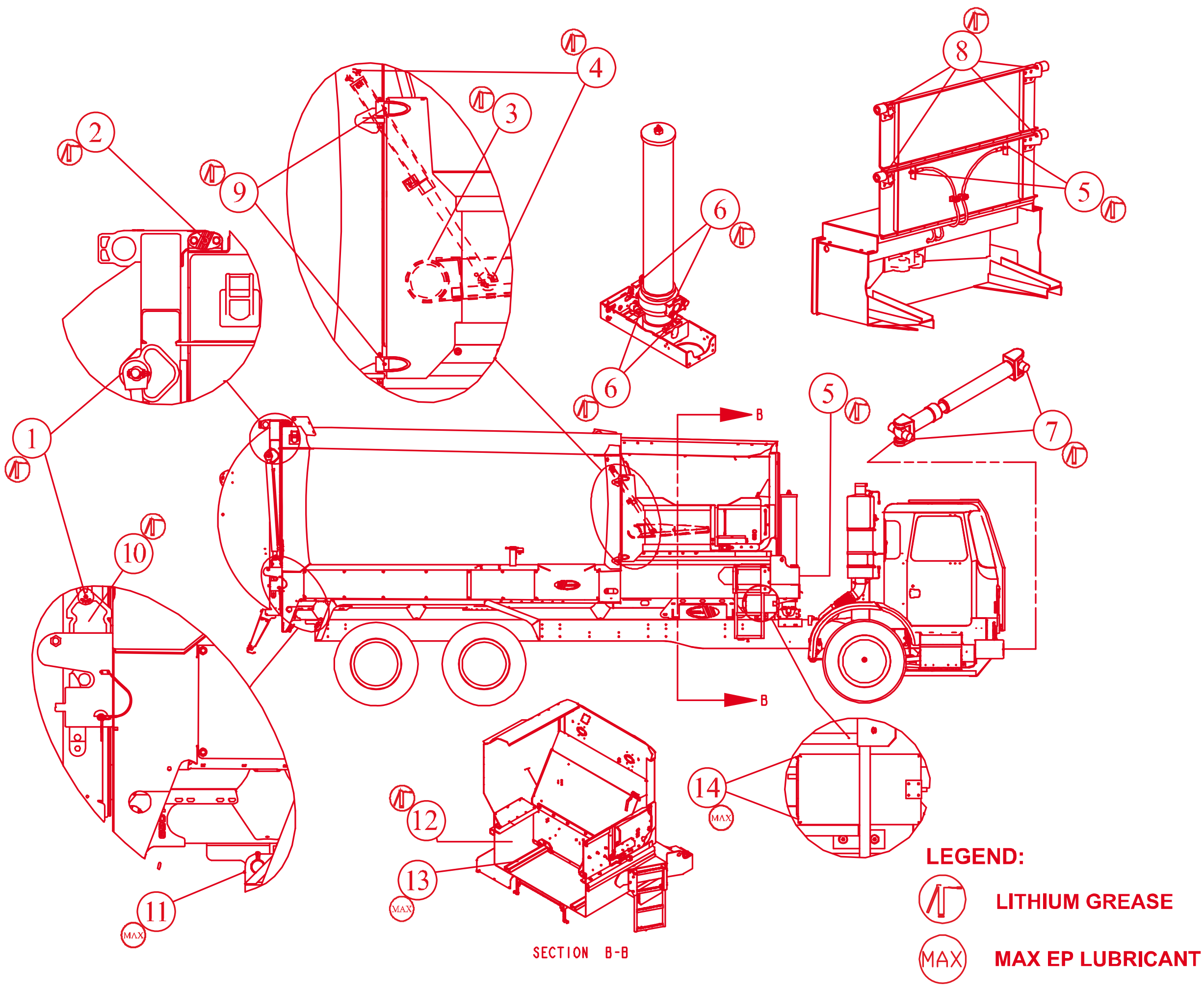
Lubrication charts in this manual may differ from the ones displayed on the vehicles. For lubrication specifications, always refer to the charts on the vehicles.

Figure 4-10 Lube charts on vehicle right-hand side



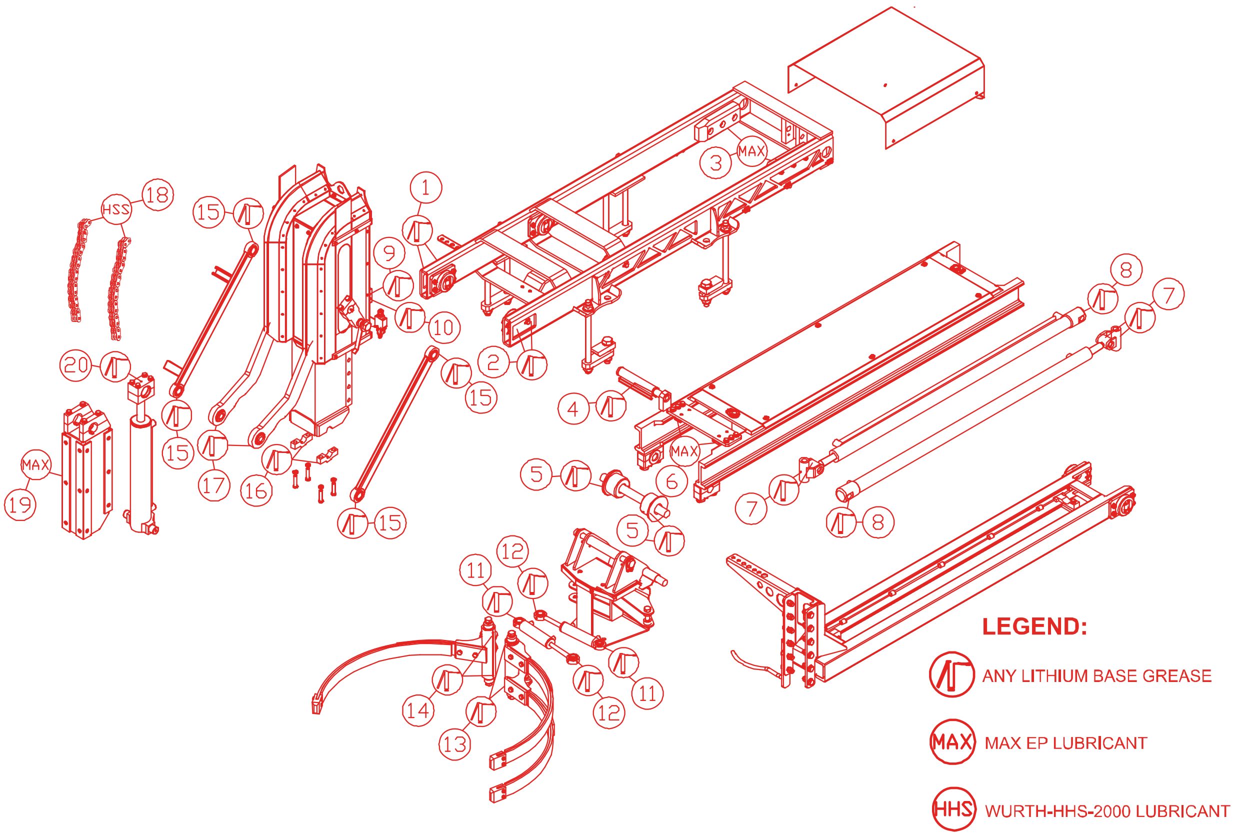
Figure 4-11 AUTOMIZER™ lubrication charts

LUBRICATION CHART - AUTOMIZER



LUBRICATION CHART *		
NO.	DESCRIPTION	FREQUENCY
1	TAILGATE CYLINDER PINS	WEEKLY
2	TAILGATE HINGES	WEEKLY
3	CRUSHER PANEL HINGES	WEEKLY
4	CRUSHER PANEL CYLINDER PINS	WEEKLY
5	PACKER CYLINDER PINS	TWICE A WEEK
6	BODY HOIST PINS	WEEKLY
7	PUMP DRIVE SHAFT “U” JOINT	TWICE A WEEK
8	FOLLOWER PANEL ROLLERS	TWICE A WEEK
9	HOPPER DOOR HINGES	WEEKLY
10	TAILGATE LOCKING MECHANISM	WEEKLY
11	BODY HINGES	WEEKLY
12	HOPPER SIDE WALLS	WEEKLY
13	FLOOR GUIDES	WEEKLY
14	SUMP BOX HINGES	WEEKLY

LUBRICATION CHART RIGHT-HAND ARM



LUBRICATION CHART*		
NO.	DESCRIPTION	FREQUENCY
1	LEFT OUTTER RAIL ROLLER BEARING	WEEKLY
2	RIGHT OUTTER RAIL ROLLER BEARING	WEEKLY
3	OUTTER RAIL TEFLON GUIDE (MAX EP)	WEEKLY
4	CENTER RAIL HOSE HOLDER	MONTHLY
5	CENTRAL RAIL ROLLER BEARING	WEEKLY
6	CENTRAL RAIL TEFLON GUIDE (MAX EP)	WEEKLY
7	IN / OUT CYLINDER ROD END	WEEKLY
8	IN / OUT CYLINDER BUSHING	WEEKLY
9	LEFT INNER RAIL ROLLER BEARING	WEEKLY
10	RIGHT INNER RAIL ROLLER BEARING	WEEKLY
11	GRIPPER CYLINDER BUSHING	WEEKLY
12	GRIPPER CYLINDER ROD END	WEEKLY
13	GRIPPER RIGHT BLADE PIVOT	WEEKLY
14	GRIPPER LEFT BLADE PIVOT	WEEKLY
15	GRIPPER LEVELING BARS	WEEKLY
16	OUTTER POST BOTTOM PLATES	WEEKLY
17	GRIPPER UP / DWON ARM	WEEKLY
18	LOAD CHAIN (WURTH-HHS-2000)	WEEKLY
19	INNER POST TEFLON PLATE (MAX EP)	WEEKLY
20	UP / DOWN CYLINDER ROD END	WEEKLY

USE ALL PURPOSE COMMERCIAL LITHIUM BASE GREASE.
NEVER APPLY GREASE ON THE WEAR PLATES; USE MAX EP LUBRICANT OR DISH WASHING SOAP.

Caution!

Never grease the side rails and the outside of rollers. Sand and other abrasives stick to grease, which may cause premature component wear.

Caution!

Because of their intensive use, the packer and its accessories must be lubricated every working day.

Greasing Crusher Panel (optional)

To properly maintain the crusher panel:

1. Grease the crusher panel cylinder heads by using the grease fittings.
2. Grease the crusher panel bushings.
3. Grease the grease fittings on the lower tube rings (see Figure 4-13).

Figure 4-12 Grease areas

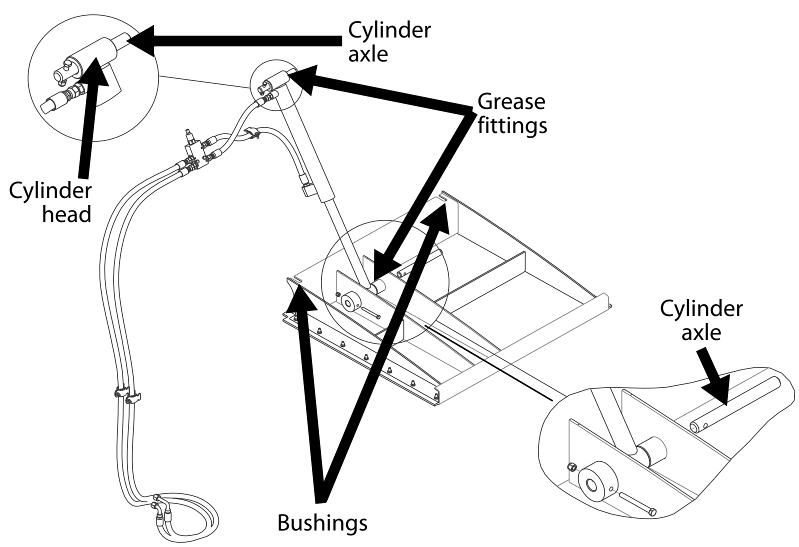
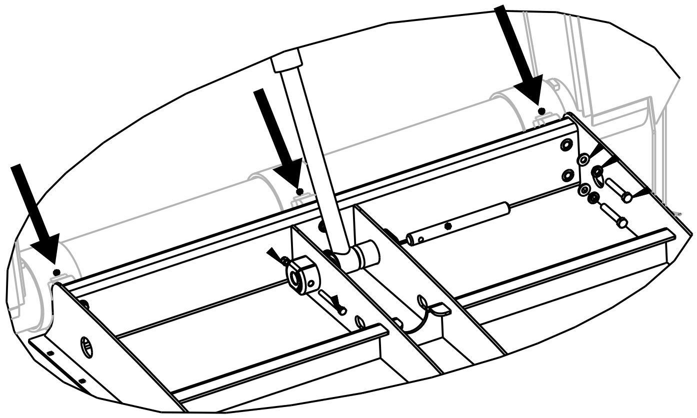


Figure 4-13 Grease fittings on lower tube rings



Tailgate and Body Hinges

Inspecting Body-Chassis Hinges

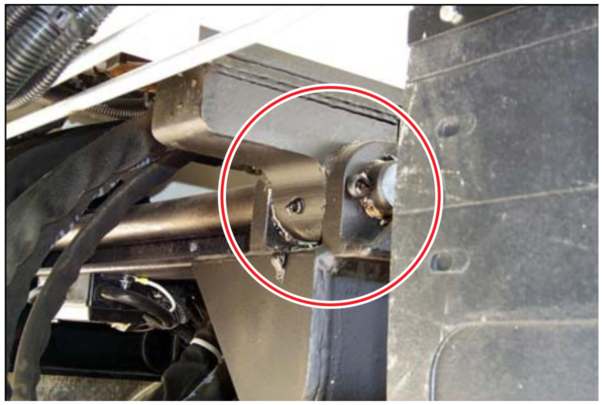
The body-chassis hinges should be lubricated monthly. Also, check for cracks or corrosion. Any crack must be reported, and repaired by *qualified* personnel. If necessary, contact Labrie*Plus* for technical support.

Danger! Do not operate this equipment if there are any signs of damage or incomplete repairs.

Figure 4-14 Body hinge



Figure 4-15 Body hinge (view from behind the rear mudguard)



Lubricating Tailgate-Locking Mechanism and Hinges

It is important to lubricate the tailgate-locking mechanism and tailgate hinges and cylinders with multipurpose grease (see *Recommended Lubricants* on page 99) as per the lubrication schedule.

NOTE: In co-mingle units, tailgate hooks must also be lubricated regularly.

Also, inspect the welds around the hinges. The proper working condition of the following components is also to be checked:

- Tailgate hydraulic cylinders
- Cylinder pins and circlips
- Tailgate hinges and pins
- Wear on the locking mechanism
- Wear on the tailgate-locking pins
- Tailgate rubber seal

Caution! Excessive wear may compromise the proper working condition of the tailgate.

Figure 4-16 Tailgate-locking mechanism

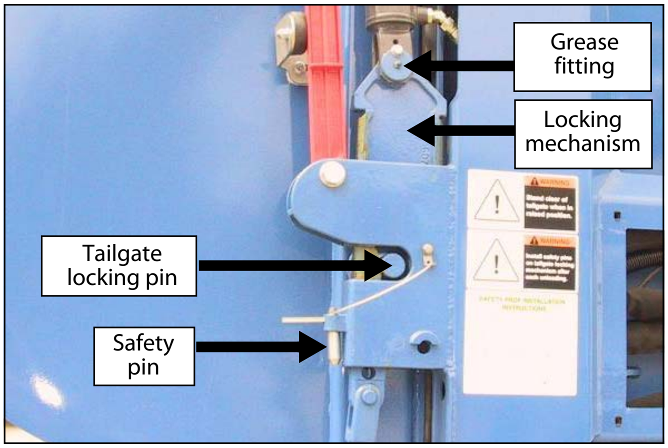


Figure 4-17 Cylinder retaining ring

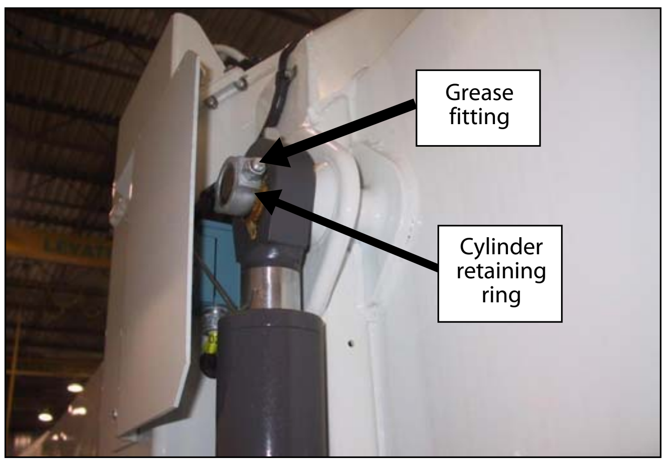


Figure 4-18 Tailgate hinges (on standard and co-mingle units)

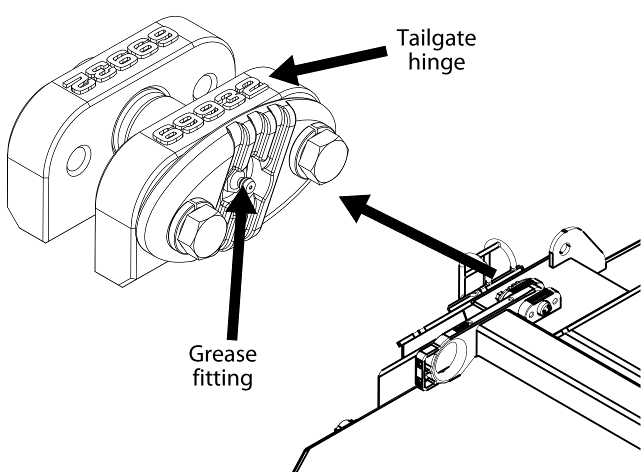


Figure 4-19 Tailgate hooks (on co-mingle units only)

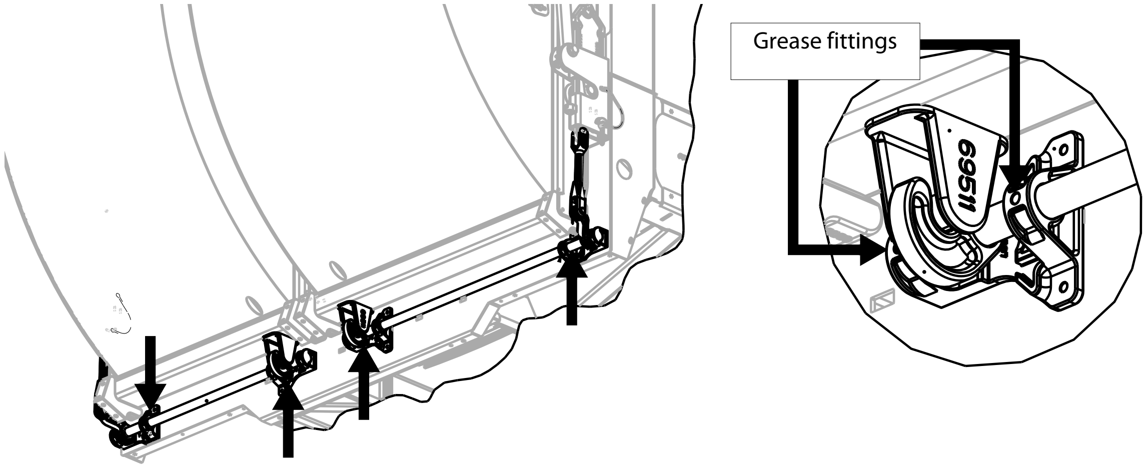
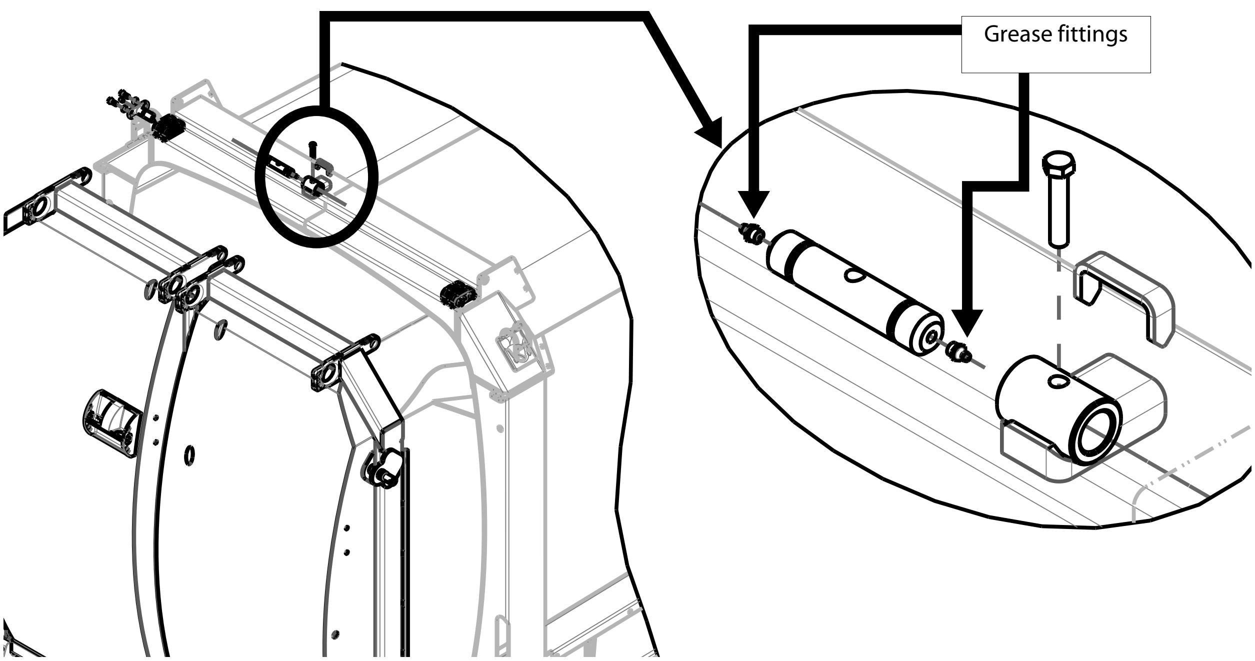
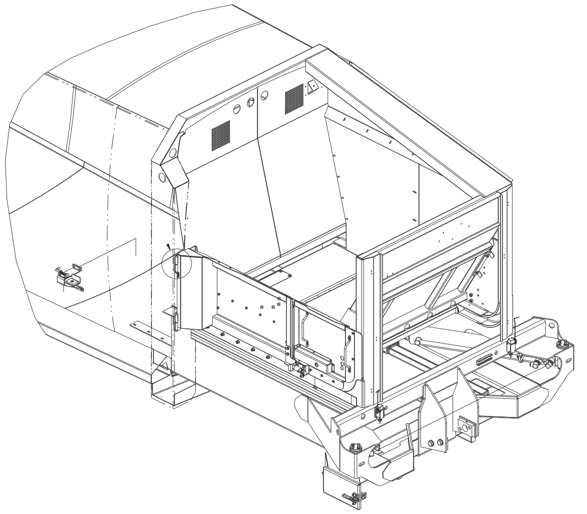
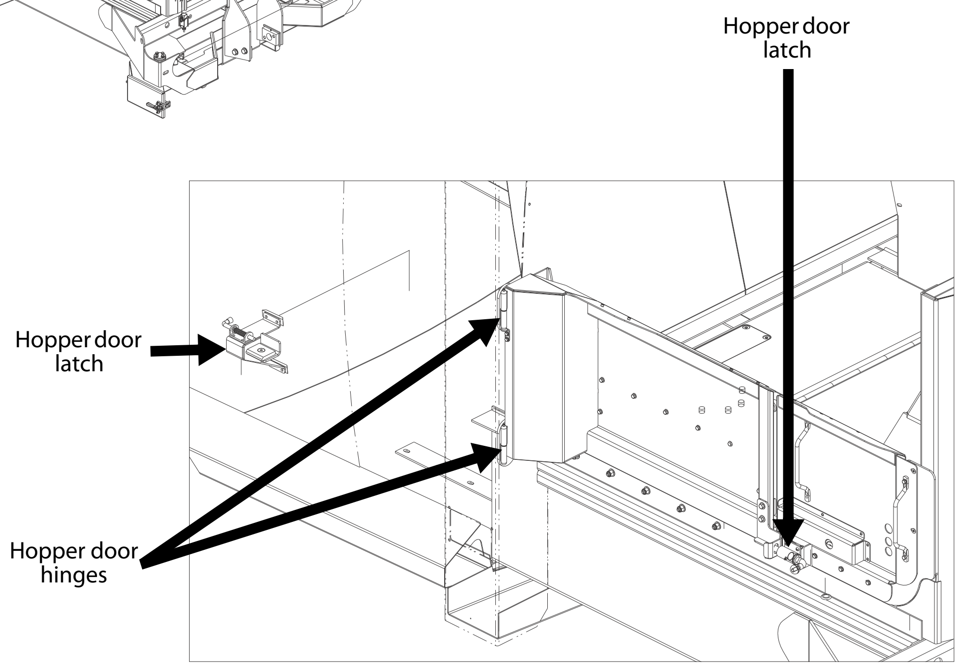


Figure 4-20 Tailgate hinges (on co-mingle units only)

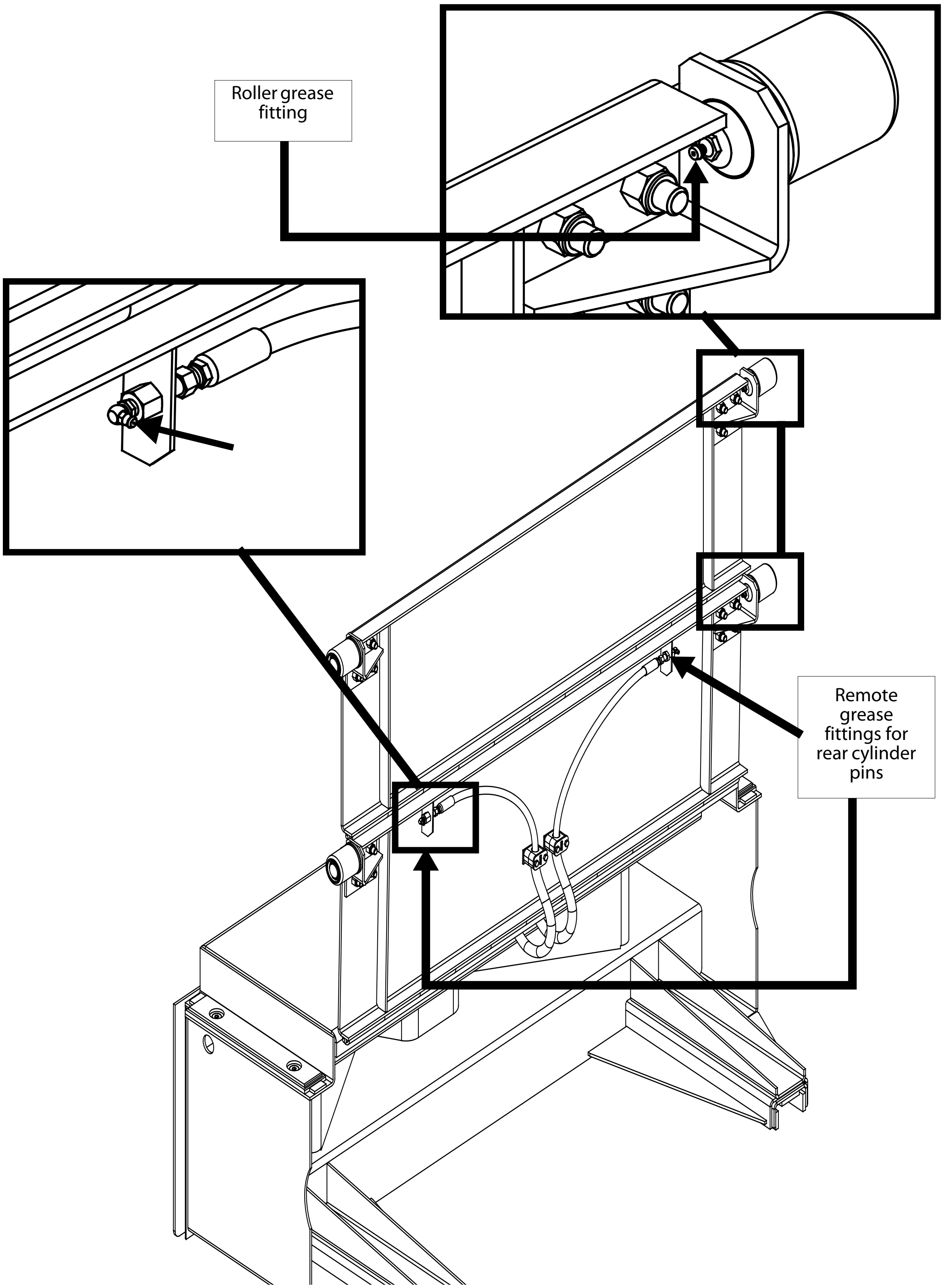


Hopper Door Lubrication Points

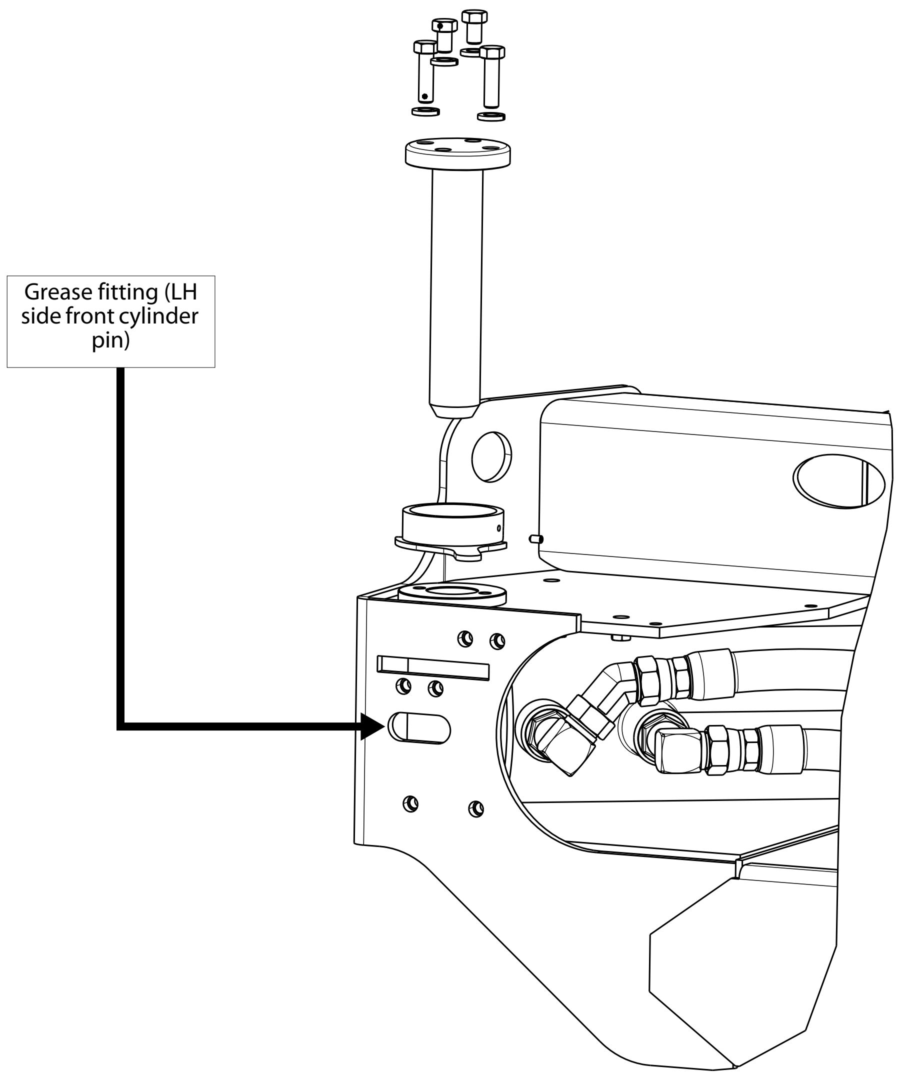




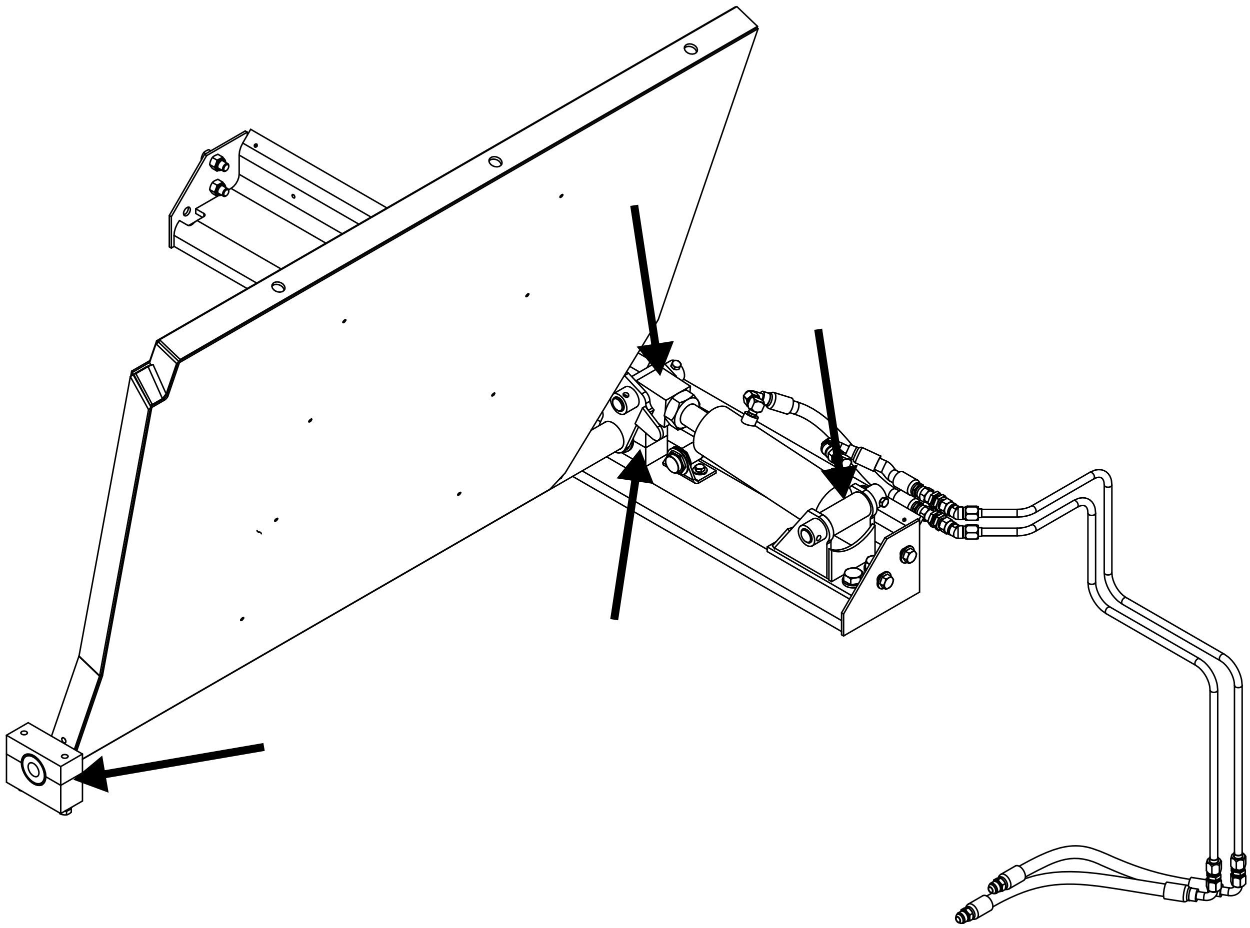
Packer Lubrication Points (1)



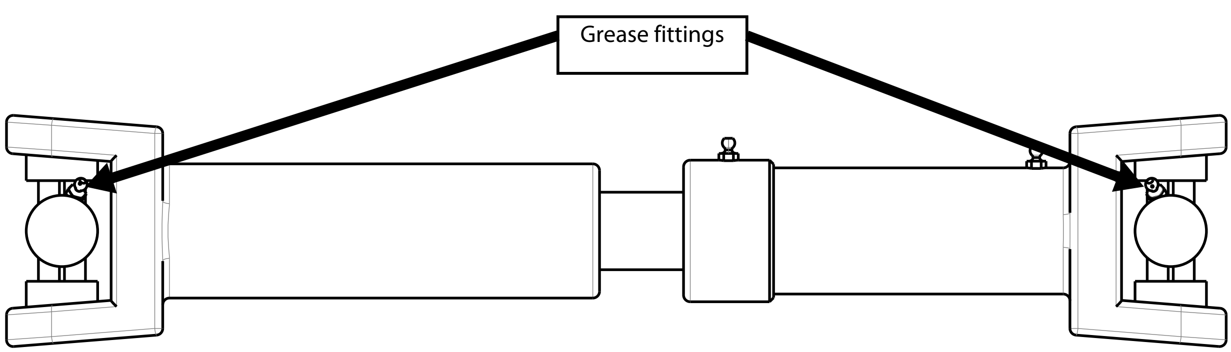
Packer Lubrication Points (2)



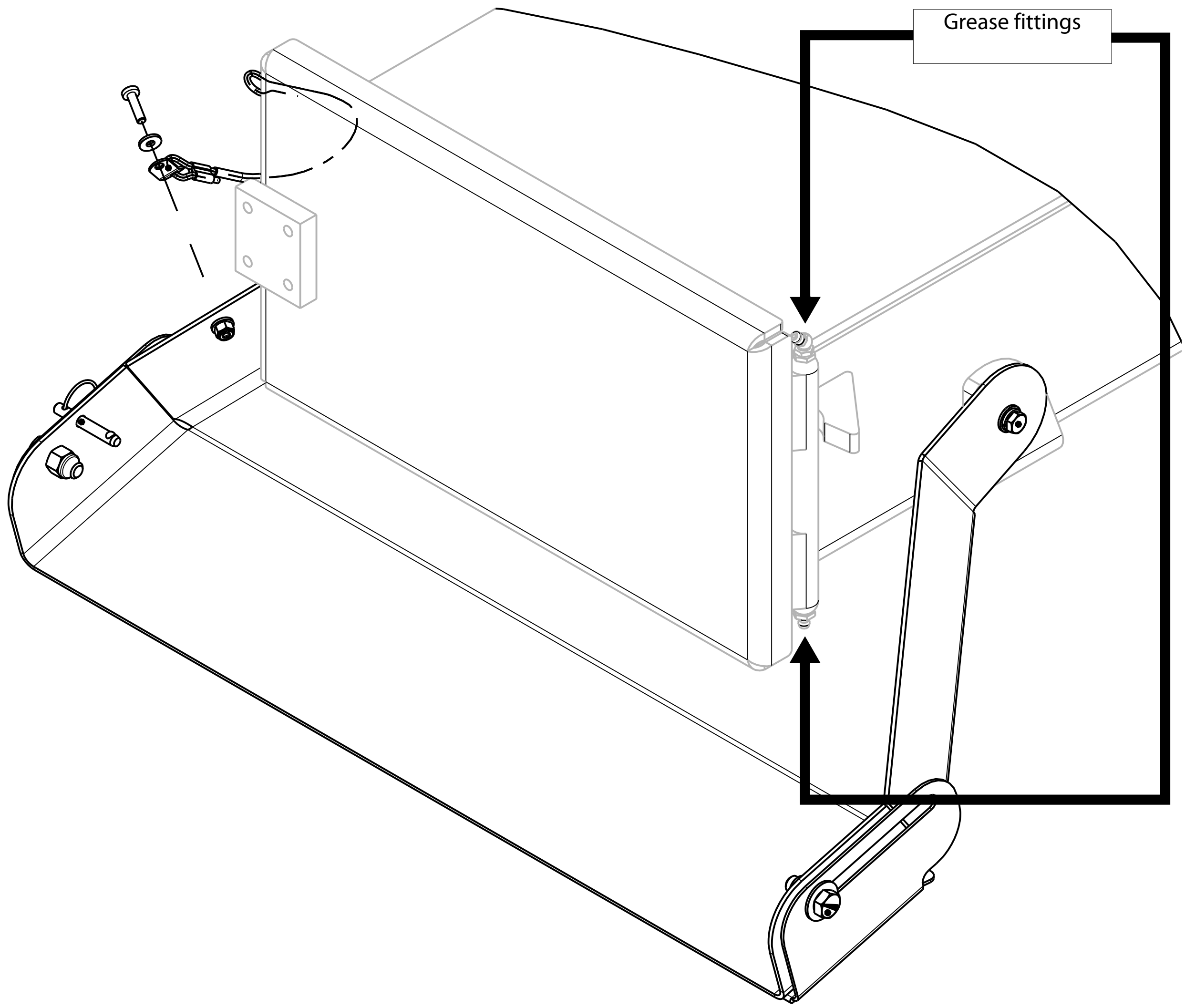
Chute Lubrication Points (Co-Mingle Vehicles)



Pump Drive Shaft "U" Joint



Sump Box Hinges



5

Hydraulic System

As with all hydraulic systems, it may be necessary to periodically check and adjust the pressure relief settings. It may be that a major hydraulic component has been changed, that the vehicle is not performing in terms of payload, or that the vehicle has recently been put into service and the system requires adjustment following a run-in period.

Danger! Always lock out and tag out the vehicle when inspecting or performing maintenance on the vehicle (see *Locking Out and Tagging Out the Vehicle* on page 12).

Danger! Human skin can be easily penetrated by high pressure oil (2000 psi and above). Failure to take appropriate safety precautions may result in serious injury or death.

Danger! Because of extreme overhead dangers, equipment must be properly supported when servicing sections on the hydraulic system.

General Maintenance

To keep the hydraulic system efficient and reliable, the following care must be taken:

- Every day, check that hydraulic lines and connections are not leaking. Correct if necessary.
- Inspect the pump for leaks or unusual noises.
- When maintenance is carried out, protect all hoses, fittings, pipes, or any other ingress points from dirt that would eventually get into the oil. Plug hoses that are not connected.
- Inspect the hydraulic system at least once a month, and adjust pressure if necessary (see *Steel hydraulic tank* on page 138).
- For new vehicles, change the return filter element after 50 hours of use, and twice a year afterwards (see *Replacing Filter Elements* on page 154).

- Clean the strainer inside the hydraulic tank after the first 50 hours of use, and once a year afterwards (see *Cleaning the Strainer* on page 153).
- Hydraulic oil must be replaced at least once a year, or when contaminated (see *Emptying the Hydraulic Tank* on page 152).

NOTE: The ball valve on the hydraulic tank must be completely open before engaging the pump or starting the engine.

Labrie Enviroquip Group requires that the hydraulic fluid and return oil filter be changed and that the strainer be cleaned before changing the hydraulic pump.

Manufacturer's warranty on hydraulic pumps provided or sold by Labrie Enviroquip Group could be declared void if the hydraulic fluid and return oil filter are not changed, and if the strainer is not cleaned prior to replacing the hydraulic pump.

Therefore, it is mandatory to change the return oil filter and clean the strainer after the *first* 50 hours of use and then once a year. The hydraulic fluid must be changed once a year. Hydraulic fluid contamination will severely damage hydraulic components.

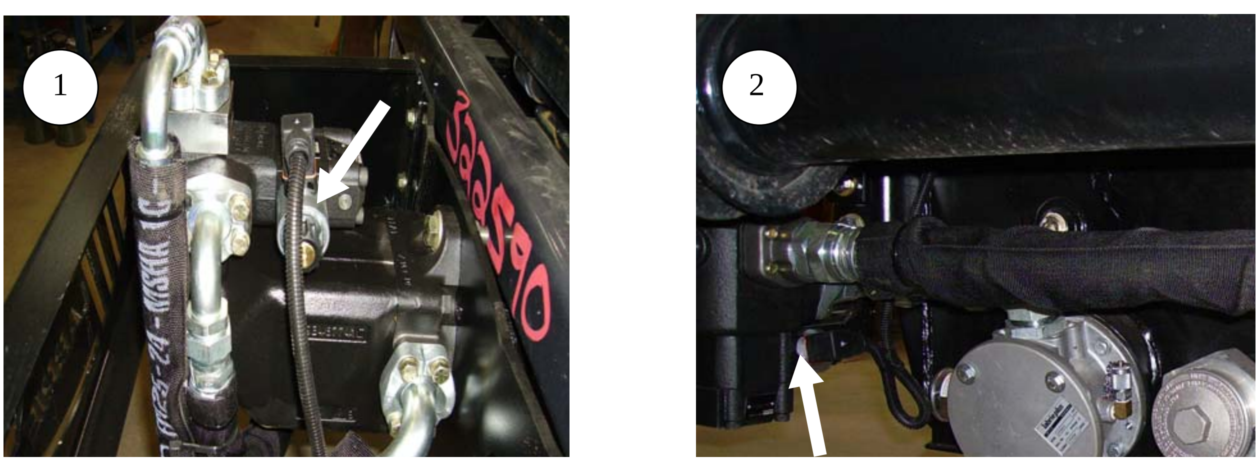
It is recommended to have the hydraulic fluid tested and analyzed by a lab to prevent hydraulic system or pump breakdown. This will also optimize the frequency of hydraulic fluid changes. Labrie vehicles are now equipped with an "oil sampler coupler." For more information, see *Testing Hydraulic Oil* on page 100.

NOTE: Evidence of maintenance and/or fluid samples could be requested when filing warranty claims concerning the hydraulic system or pump.

Introducing the Dual Vane Pump

AUTOMIZER™ vehicles are equipped with a dual vane pump. Both sections of the dual vane pump are activated by two electric solenoid valves. One is mounted on the pump and the other on the chassis (see Figure 5-1). The electrical signal that activates the solenoid is sent by the pump switch on the control panel.

Figure 5-1 Vane pump solenoid valve on the pump (1) and on the chassis (2)



When the dual vane pump is turned on, the transmission electronic control unit (ECU) starts monitoring vehicle and engine speed, and allows the vane pump to engage (or not). If the vehicle is going faster than 15 mph (25 km/h) or if engine speed exceeds 900 rpm, the vane pump will not engage. After the pump is engaged, it will stay engaged at any engine speed under 2300 rpm (for more information, see *Allison Transmission Parameters* on page 205).

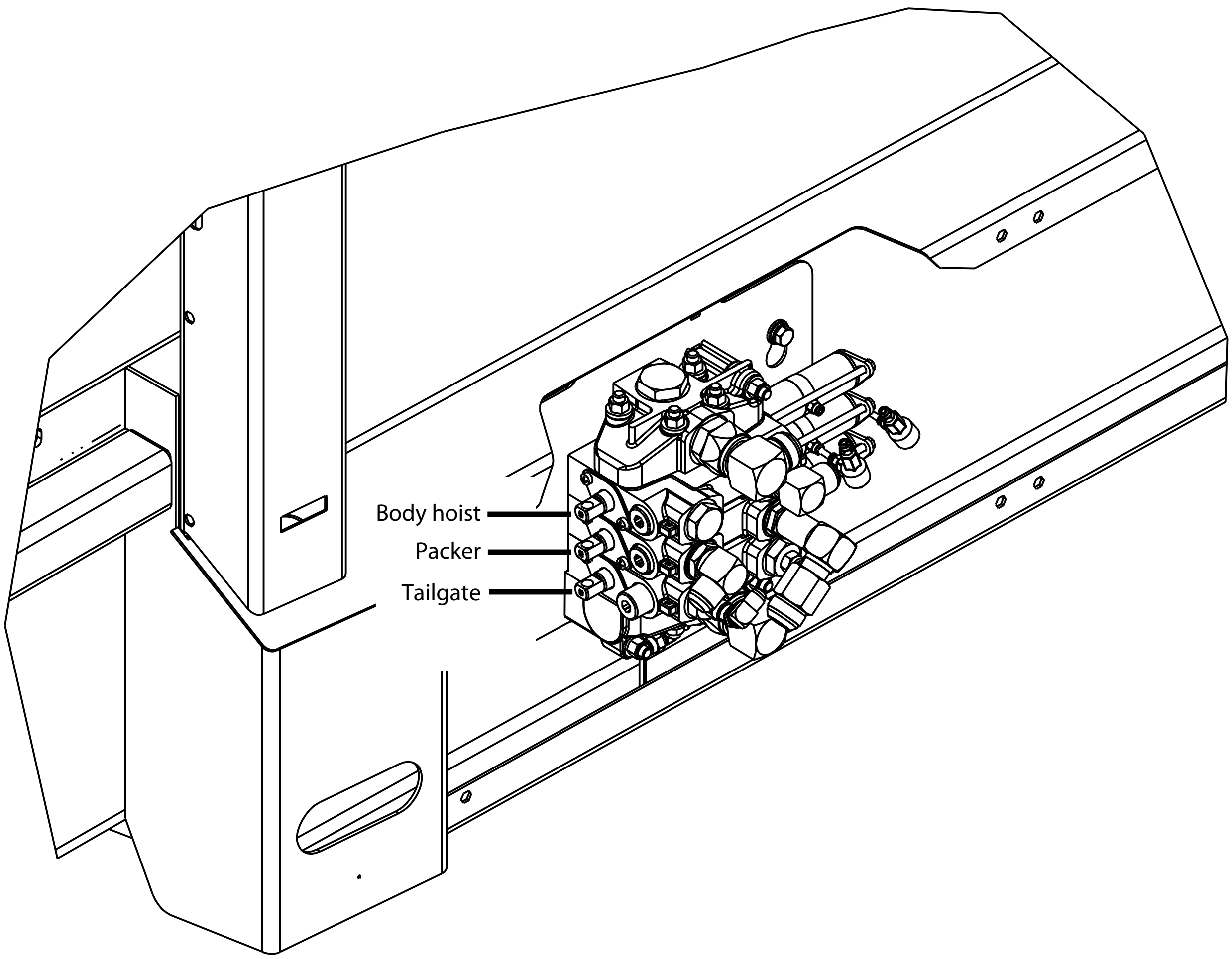
The first section of the vane pump, known as the *body* vane pump, located closer to the pump shaft, powers all body functions (tailgate, body hoist, and packer) through the directional control valve (see below). It is capable of delivering a flow of 20 gallons per minute (gpm) at 700 rpm. A dump valve located on the chassis (see Figure 5-1) limits the flow to the valve to 45 gpm. All excess flow is sent back to the hydraulic tank. When the pump is turned off, the oil returns to the hydraulic tank.

The second section of the vane pump, known as the *arm* vane pump, powers lifting arm functions and other options through the proportional valve (see *Proportional Valve* on page 121). It is capable of delivering a flow of 16 gpm at 700 rpm. A dump valve located at the pump outlet limits the flow (see Figure 5-1) to the valve to 20 gpm. All excess flow is sent back directly to the pump inlet. When the pump is turned off, all the oil returns to the inlet.

Directional Control Valve

AUTOMIZER™ vehicles are equipped with a directional control valve (see Figure 5-2), as part of the *body* vane pump, that powers all body functions (tailgate, body hoist, and packer).

Figure 5-2 Directional control valve



- **Tailgate**: 4 ways, 3 positions
- **Packer**: 4 ways, 3 positions
- **Body hoist**: 3 ways, 3 positions

NOTE: All sections are air-actuated. Electro-hydraulic actuators are also available.

For more information on the directional control valve, see *Main Hydraulic Schematic (1)* on page 185. To learn how to adjust hydraulic pressure, see *Adjusting Pressure and Relief Valves* on page 139.

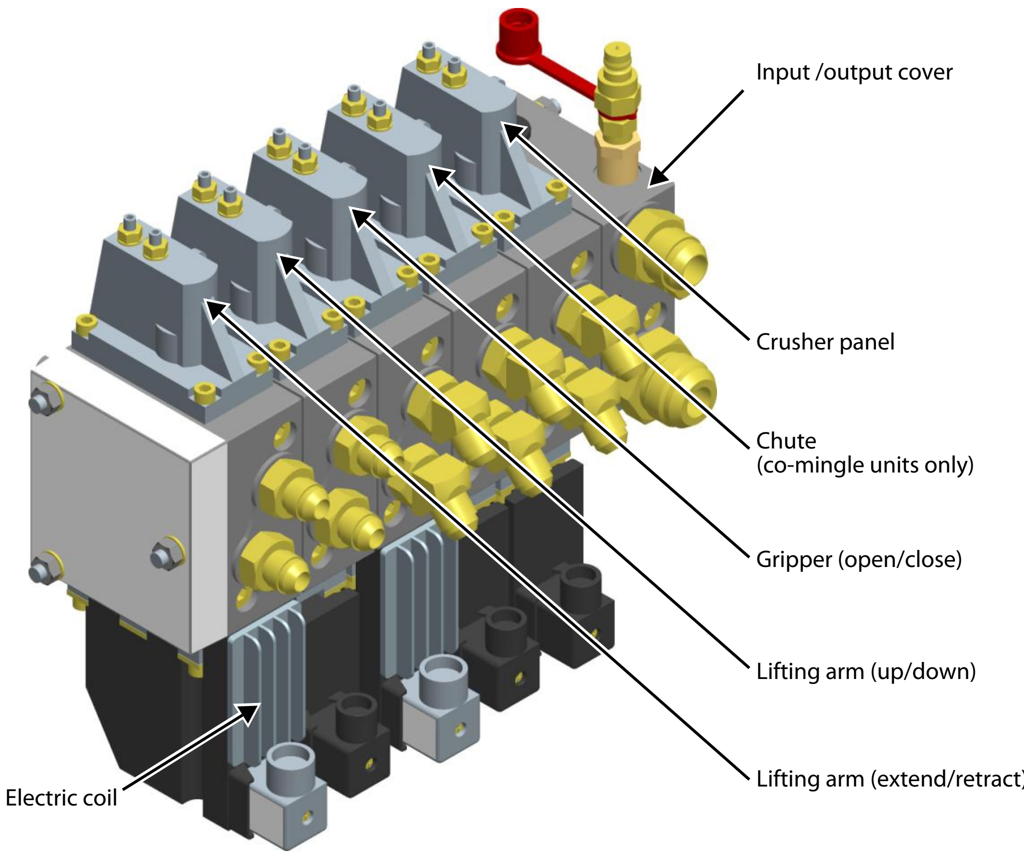
Proportional Valve

AUTOMIZER™ vehicles are equipped with a proportional valve (see Figure 5-3), as part of the *arm* vane pump, that powers all arm functions (gripper [open/close], lifting arm [extend/retract, up/down], chute [left/right], crusher panel [up/down], etc.) and other options.

As such, the amount of flow coming out of it will be according to the position of the spool. This feature, called proportional control, allows infinite control of the speed and movement of the arm.

Each section of this valve is actuated by an electric coil located under the valve.

Figure 5-3 Proportional valve



- **Input/output cover**: provided with main relief valve
- **Crusher panel section** (optional): not proportional, with load sensor relief
- **Chute section** (optional): not proportional, with load sensor relief
- **Gripper section (open/close)**: not proportional, with load sensor relief
- **Lifting arm section (up/down)**: proportional, no load sensor relief
- **Lifting arm section (extend/retract)**: proportional, no load sensor relief

Caution!

Very corrosive chemicals used to wash trucks may cause serious damage to the point where the valve coils may crack due to these chemicals. These issues can occur if the potting in the PVE is experiencing prolonged exposure to diesel- or kerosene-type liquids.
Be careful when washing your truck especially around the proportional valve. Use noncorrosive chemicals as much as possible to avoid corrosion problems such as those reported. Soap and water pressure are good alternatives to strong corrosive chemicals.

Inspecting the Pump

The hydraulic pump is powered by the vehicle engine through a drive shaft. The pump should be visually inspected every working day.

NOTE: On some units, the pump is directly installed on a PTO with no drive shaft between them.

Figure 5-4 Pump



When inspecting the pump:

1. Start the engine and engage the hydraulic pump.

   The pump should turn freely without excessive noise or vibrations.
2. Open the cab grill (if necessary) to check for oil leaks under the pump and at connection points.
3. Lock out and tag out the vehicle (see *Locking Out and Tagging Out the Vehicle* on page 12).

If electrical problems occurred with the pump, see *Troubleshooting* on page 171.

Caution!

If the unit has to be driven away for repairs on the hydraulic system, remove the drive shaft between the engine and the pump before restarting the engine.

Replacing the Hydraulic Pump

Occasionally, circumstances such as a broken pump drive shaft, a leaking or noisy pump or a lack of hydraulic pressure or oil flow may necessitate the replacement of the pump.

Before proceeding with the replacement of the pump, determine the type of pump setup that is used on your AUTOMIZER™ unit. There are 3 types of pump setups: front-mounted, PTO-driven mounted (pump connected to PTO via a drive shaft) and pump on PTO shaft. Basically, each setup calls for the same replacement method but with some differences due to the position of the pump.

A. To replace a front-mounted hydraulic pump, perform the following procedure:

1. Disengage the pump and turn off the engine.
2. Make sure the parking brake is applied and the vehicle is tagged out for maintenance purposes (refer to “Locking Out and Tagging Out the Vehicle” on page 12).
3. Close the shut-off valve (see Figure 2-3).
4. Loosen the breather cap on the hydraulic tank to depressurize the tank.

   If tank is of the pressurized type.
5. Remove the pump guard.

Figure 5-5 Pump guard



6. Disconnect the electric coil on the dump valve.
7. Place a pan under the pump to catch dripping oil and unscrew all hydraulic hoses (4) that are attached to the pump.

Caution! Before disconnecting hydraulic hoses from the pump, place a pan under it to catch oil that may drip down from disconnected lines.

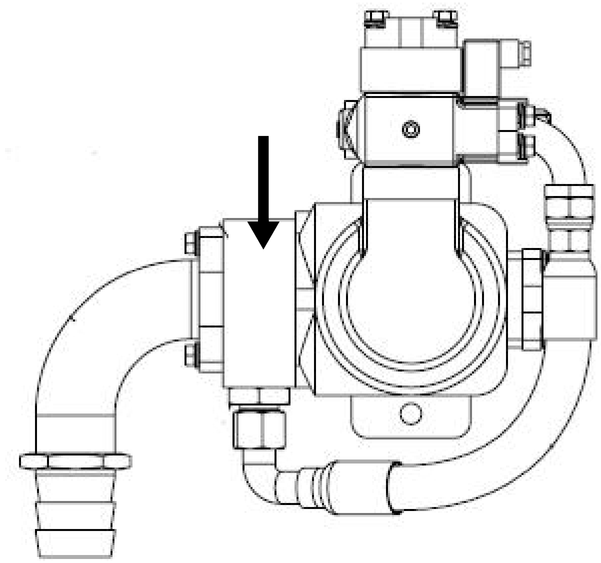
8. Remove the dump valve.

NOTE: The dump valve is usually, but not necessarily, located atop the pump.

NOTE: Always reinstall the dump valve and its components (shims, block assembly) as they were before uninstallation. Make sure you do not invert them.

9. Remove the suction block (see Figure 5-6) and save it for the new pump.

Figure 5-6 Suction block



10. Disconnect the drive shaft by removing the 4 bolts that secure the shaft to the engine.

    Some mechanics may rather want to disconnect the drive shaft from the pump.

    The choice is up to the mechanics and is based on the type of chassis the vehicle is built on.

11. Attach the pump to a lifting device and remove both 5/8" bolts that hold the pump to the pump support.

12. Remove the pump.

    If need be, disconnect the drive shaft from the pump and save it for the replacement pump.

13. Install the new pump.

    Before attempting to install the new pump, it is very important to check the porting configuration of that pump; the ports on the replacement pump must be positioned the same way as on the uninstalled pump. If not, proceed with changing the porting configuration of the new pump.

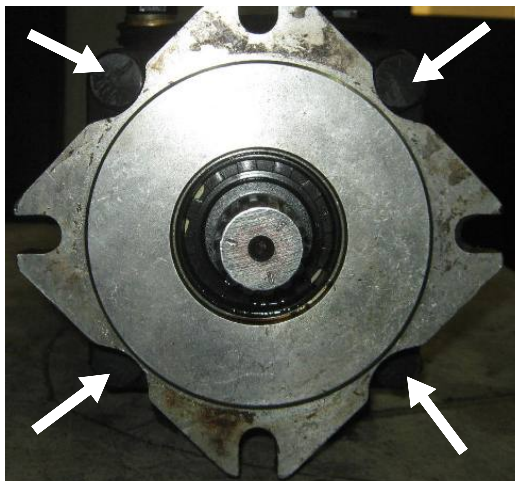
    The replacement pump must be oriented in such a way to facilitate easy reconnection to the hydraulic system and attachment to the chassis frame.

    To change the porting configuration of the new pump, proceed this way:

    13 a. Put the pump on a flat surface or in a vise.




13 b. Remove all 4 retaining bolts that hold the mounting cap in place.



NOTE: You may leave two retaining bolts partially unscrewed to facilitate rotation with a metallic bar.

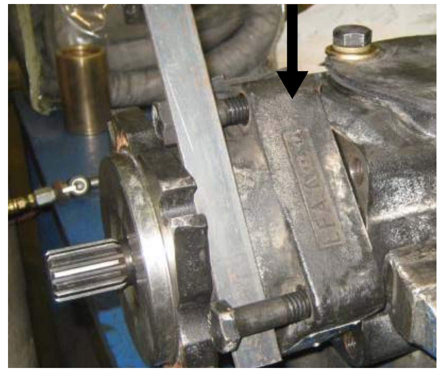


13 c. Rotate the mounting cap accordingly.

Rotation can be done by turning the mounting cap clockwise or counter-clockwise with your hands or by using a metallic bar as illustrated in the above picture.

NOTE: Make sure pump does not come apart.





NOTE: The cartridge will rotate with the housing.

IMPORTANT: Do not pull on the mounting cap.

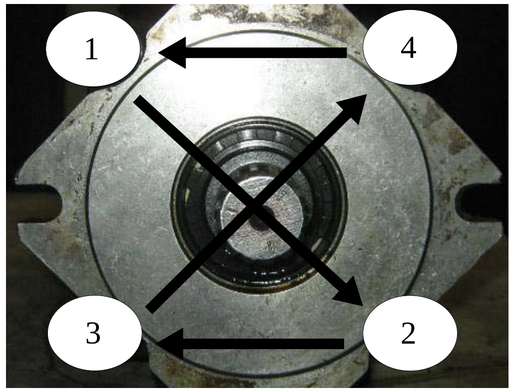


13 d. Put all 4 bolts back in place.

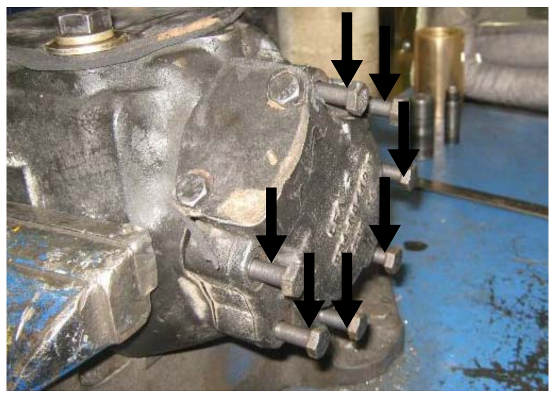
13 e. Check if the shaft rotates freely.

13 f. Tighten up all bolts to the torque of 138-140 ft-lb.

When tightening bolts, be sure to respect the following number sequence to avoid damaging the seals:



13 g. Remove all 7 retaining bolts that hold the front cap in place.



NOTE: You may leave two retaining bolts partially unscrewed to facilitate rotation with a metallic bar.

13 h. Rotate the front cap accordingly.

Rotation can be done by turning the front cap clockwise or counter-clockwise with your hands or by using a metallic bar.

NOTE: Make sure pump does not come apart.



IMPORTANT: Be sure not to pull on the front cap. Otherwise, the dowel pin may leave its position in the housing.

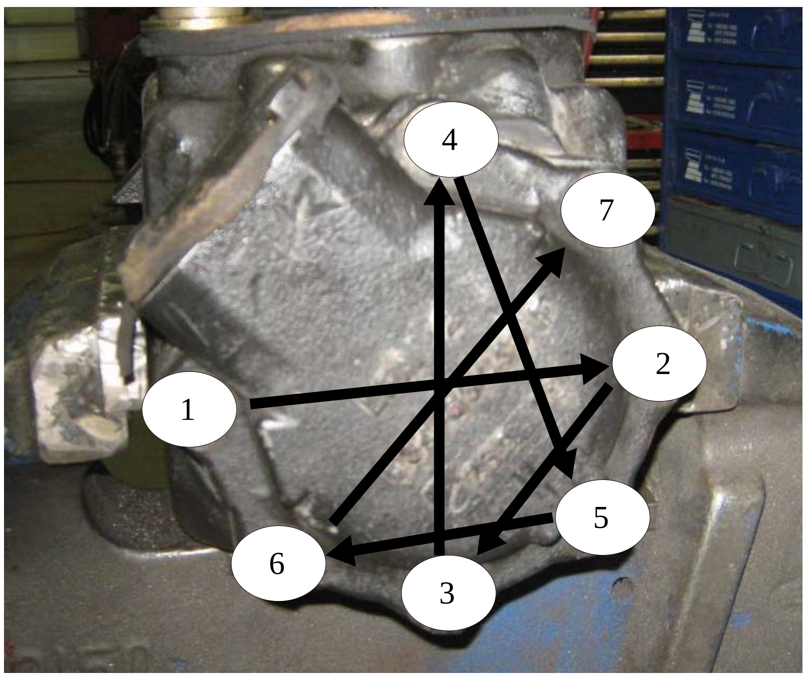
NOTE: The cartridge will rotate with the housing.

13 i. Put all 7 bolts back in place.

13 j. Check if the shaft rotates freely.

13 k. Tighten up all bolts to the torque of 50 ft-lb.

When tightening bolts, be sure to respect the following number sequence to avoid damaging the seals:



14. Reinstall the drive shaft if it has been removed from the engine.

Before proceeding with the installation of the drive shaft apply the following procedure:

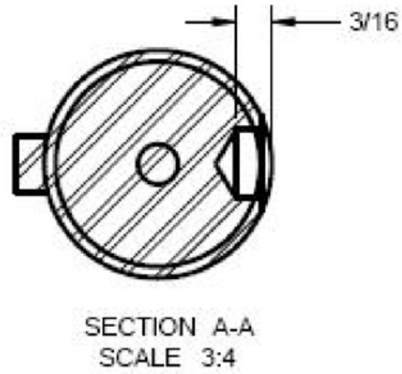
14 a. On the drive shaft mark the location where a hole must be drilled.

Use the yoke as a jig to determine where exactly the hole must be drilled then remove it.

NOTE: The yoke must be fully engaged on the shaft before determining the exact location where the hole must be drilled.

14 b. Drill a hole with a 5/16” diameter on the drive shaft.

Figure 5-7 Depth of hole to be drilled



14 c. Reinstall the drive shaft.

14 d. Place the yoke on the shaft as illustrated on page 135.

The yoke must be fully engaged on the shaft with both holes aligned (one hole over the other).

14 e. Apply Loctite 243 (medium strength) to bolt threads and insert the bolt firmly into the holes to properly secure the yoke to the shaft.

14 f. Install a steel wire on the yoke bolt (the wire must be fixed tight around the bolt) [see Figure 5-12].

15. Using a lifting device, install the new pump on the pump support.
16. Put both 5/8” bolts back in to secure the pump to the plate.
17. Go through Steps 9 to 5 inclusively to reinstall the various components of the pump assembly.
18. Tighten back the breather cap.
19. Prime the new pump (see *Priming a New Pump* on page 136).
20. Put the front pump guard back on (see Figure 5-5).

Caution! Check level of hydraulic oil in tank. Add oil if needed.

NOTE: Labrie Enviroquip Group strongly recommends you change the filter element and the hydraulic oil as well as clean the hydraulic tank after installation of a new pump (see *Replacing Filter Elements* on page 154 and *Replacing Hydraulic Oil* on page 156).

B. To replace a PTO-driven hydraulic pump, perform the following procedure:

1. Disengage the pump and turn off the engine.
2. Make sure the parking brake is applied and the vehicle is tagged out for maintenance purposes (refer to “Locking Out and Tagging Out the Vehicle” on page 12).
3. Close the shut-off valve (see Figure 2-3).

4. Loosen the breather cap on the hydraulic tank to depressurize the tank.

   If tank is of the pressurized type.

5. Disconnect the electric coil on the dump valve, if equipped.

6. Place a pan under the pump to catch dripping oil and unscrew all hydraulic hoses (4) that are attached to the pump.

Caution!



Before disconnecting hydraulic hoses from the pump, place a pan under it to catch oil that may drip down from disconnected lines.

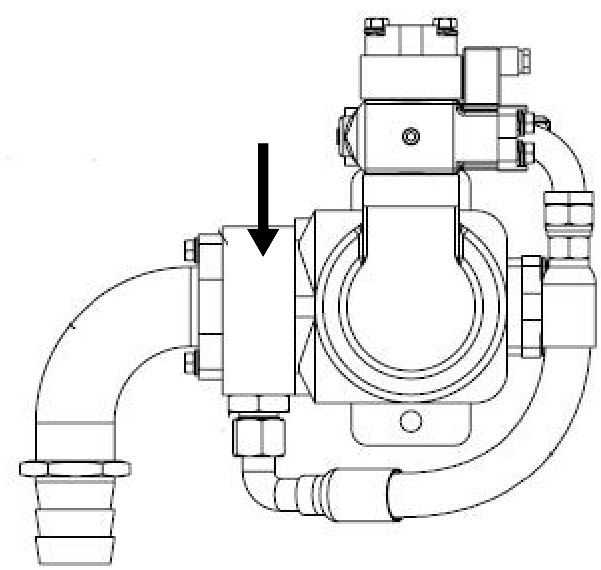
7. Remove the dump valve.

NOTE: The dump valve is usually, but not necessarily, located atop the pump.

NOTE: Always reinstall the dump valve and its components (shims, block assembly) as they were before uninstallation. Make sure you do not invert them.

8. Remove the suction block (see Figure 5-6) and save it for the new pump.

Figure 5-8 Suction block



9. Disconnect the drive shaft by removing the 4 bolts that secure the shaft to the engine.

   Some mechanics may rather want to disconnect the drive shaft from the pump.

   The choice is up to the mechanics and is based on the type of chassis the vehicle is built on.

10. Attach the pump to a lifting device and remove both 5/8” bolts that hold the pump to the pump support.

11. Remove the pump.

If need be, disconnect the drive shaft from the pump and save it for the replacement pump.

12. Install the new pump.

Before attempting to install the new pump, it is very important to check the porting configuration of that pump; the ports on the replacement pump must be positioned the same way as on the uninstalled pump. If not, proceed with changing the porting configuration of the new pump.

The replacement pump must be oriented in such a way to facilitate easy reconnection to the hydraulic system and attachment to the chassis frame.

Go to **page 124** to know how to change the porting configuration of the new pump; procedure begins with Step 13 a.

13. Reinstall the drive shaft if it has been removed from the engine.

Before proceeding with the installation of the drive shaft apply the following procedure:

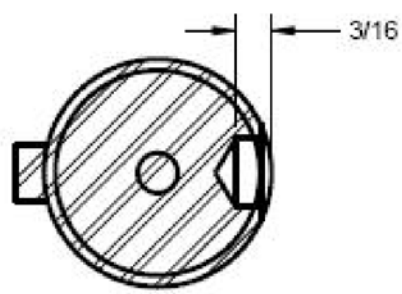
13 a. On the drive shaft mark the location where a hole must be drilled.

Use the yoke as a jig to determine where exactly the hole must be drilled then remove it.

NOTE: The yoke must be fully engaged on the shaft before determining the exact location where the hole must be drilled.

13 b. Drill a hole with a 5/16” diameter on the drive shaft.

Figure 5-9 Depth of hole to be drilled



13 c. Reinstall the drive shaft.

13 d. Place the yoke on the shaft as illustrated on page 135.

The yoke must be fully engaged on the shaft with both holes aligned (one hole over the other).

13 e. Apply Loctite 243 (medium strength) to bolt threads and insert the bolt firmly into the holes to properly secure the yoke to the shaft.

13 f. Install a steel wire on the yoke bolt (the wire must be fixed tight around the bolt) [see Figure 5-12].

14. Using a suitable lifting device, install the new pump on the pump support.

15. Put both 5/8” bolts back in to secure the pump to the plate.

16. Go through Steps 8 to 5 inclusively to reinstall the various components of the pump assembly.

17. Tighten back the breather cap.

18. Prime the new pump (see *Priming a New Pump* on page 136).

Caution! Check level of hydraulic oil in tank. Add oil if needed.

NOTE: Labrie Enviroquip Group strongly recommends you change the filter element and the hydraulic oil as well as clean the hydraulic tank after installation of a new pump (see *Replacing Filter Elements* on page 154 and *Replacing Hydraulic Oil* on page 156).

C. To replace a pump on a PTO shaft, apply the following procedure:

1. Disengage the pump and turn off the engine.

2. Make sure the parking brake is applied and the vehicle is tagged out for maintenance purposes (refer to "Locking Out and Tagging Out the Vehicle" on page 12).

3. Close the shut-off valve (see Figure 2-3).

4. Loosen the breather cap on the hydraulic tank to depressurize the tank.

If tank is of the pressurized type.

5. Disconnect the electric coil on the dump valve, if equipped.

6. Place a pan under the pump to catch dripping oil and unscrew all hydraulic hoses (4) that are attached to the pump.

Caution! Before disconnecting hydraulic hoses from the pump, place a pan under it to catch oil that may drip down from disconnected lines.

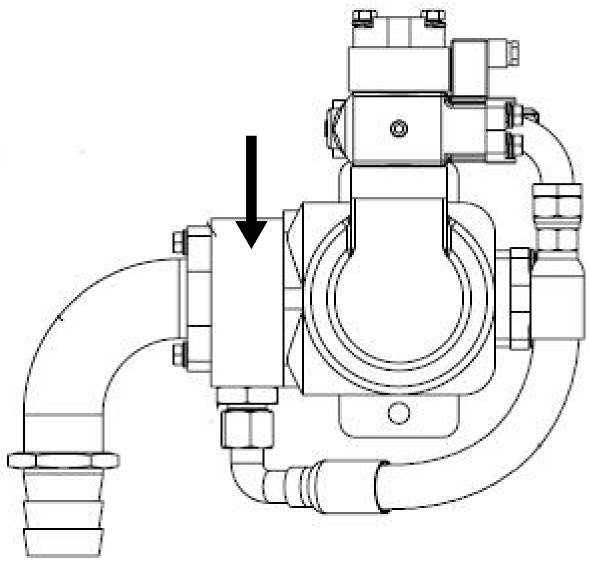
7. Remove the dump valve.

NOTE: The dump valve is usually, but not necessarily, located atop the pump.

NOTE: Always reinstall the dump valve and its components (shims, block assembly) as they were before uninstallation. Make sure you do not invert them.

8. Remove the suction block (see Figure 5-6) and save it for the new pump.

Figure 5-10 Suction block



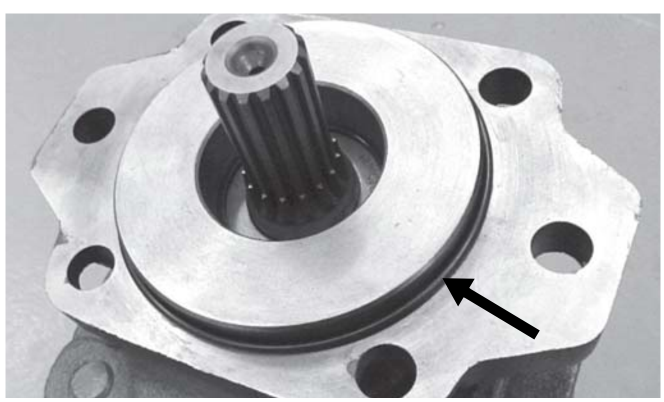
9. Attach the pump to a suitable lifting device and remove all 5/8" bolts that hold the pump to the PTO extension shaft.
10. Remove the pump.
11. Install the new pump using a suitable lifting device.

    Before attempting to install the new pump, it is very important to check the porting configuration of that pump; the ports on the replacement pump must be positioned the same way as on the uninstalled pump. If not, proceed with changing the porting configuration of the new pump.

    The replacement pump must be oriented in such a way to facilitate easy reconnection to the hydraulic system and attachment to the chassis frame.

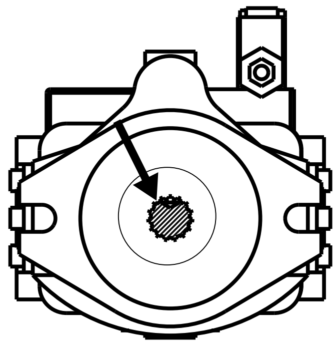
    Go to **page 124** to know how to change the porting configuration of the new pump; procedure begins with Step 13 a.

NOTE: If the old pump had an o-ring on the front cap, the replacement pump must have a new o-ring installed. Make sure this is done before installing the pump.



12. Connect the pump to the PTO extension shaft. Align the splines on the PTO to those on the pump for ease of connection.

Figure 5-11 Splines on pump



13. Put all 5/8” bolts back in to secure the pump to the shaft.
14. Go through Steps 8 to 5 inclusively to reinstall the various components of the pump assembly.
15. Tighten back the breather cap.
16. Prime the new pump (see *Priming a New Pump* on page 136).

Caution!



Check level of hydraulic oil in tank. Add oil if needed.

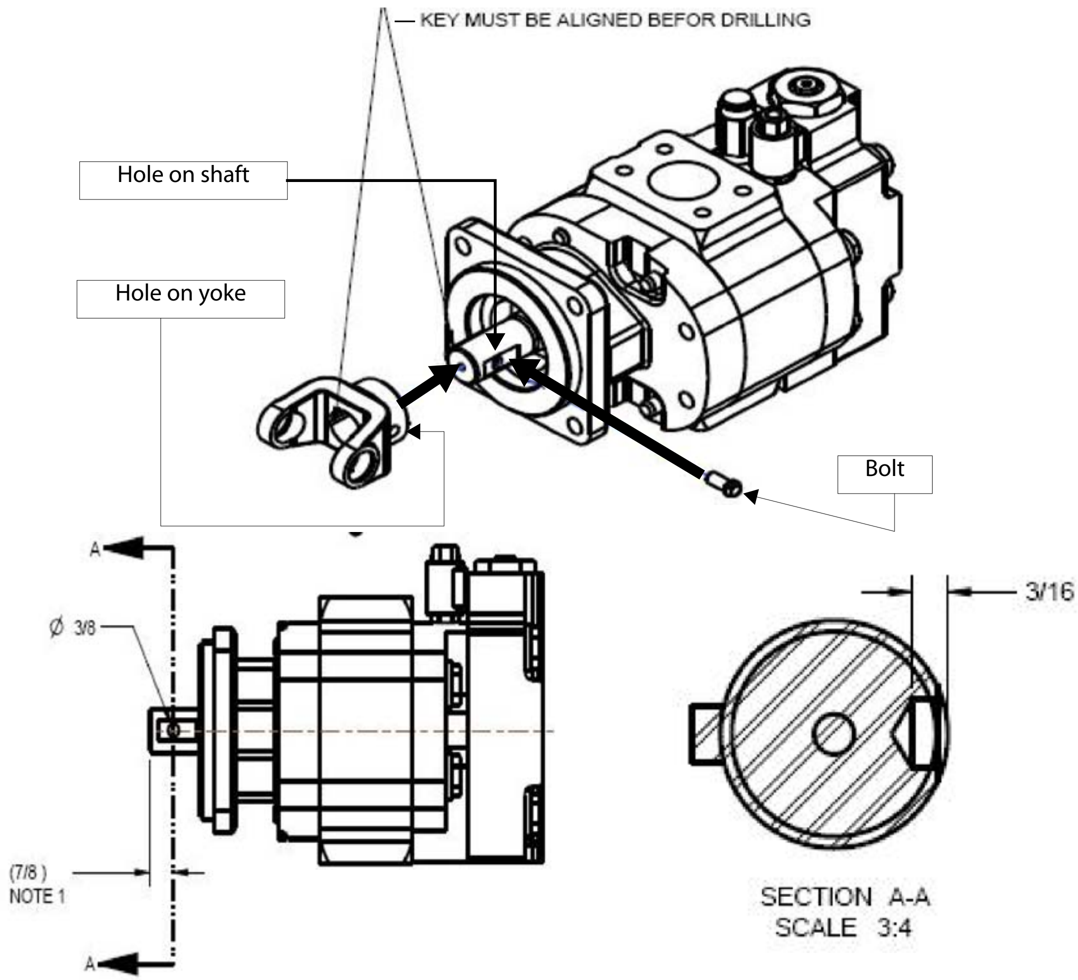
NOTE: **Labrie Enviroquip Group strongly recommends you change the filter element and the hydraulic oil as well as clean the hydraulic tank after installation of a new pump (see *Replacing Filter Elements* on page 154 and *Replacing Hydraulic Oil* on page 156).**

Installing a Yoke Locking Bolt

NOTE: It is important to perform this procedure after a pump replacement or a pump drive shaft replacement.

To install a yoke locking bolt, do the following:

1. Locate the hole on the yoke and the hole on the drive shaft (see illustration below).

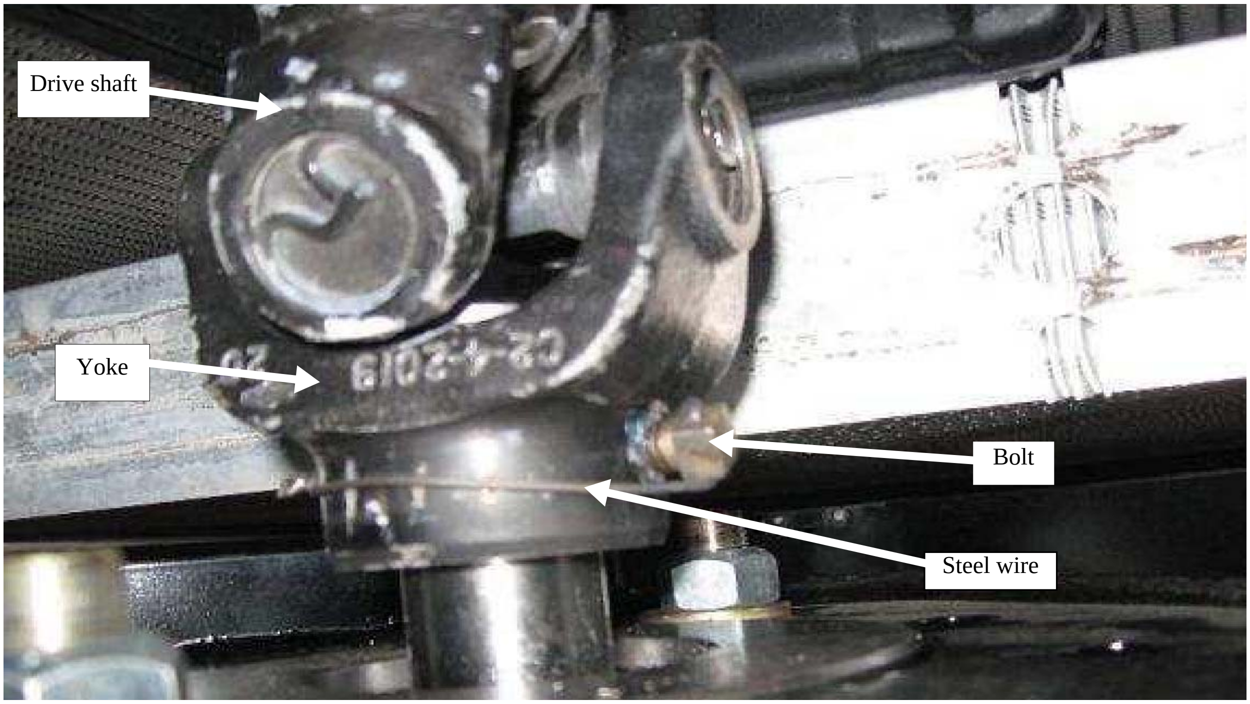


2. Place the yoke on the shaft as illustrated above.

   The yoke must be fully engaged on the shaft with both holes aligned (one hole over the other).

3. Apply Loctite 243 (medium strength) to bolt threads and insert the bolt firmly into the holes to properly secure the yoke to the shaft.
4. Install a steel wire on the yoke bolt (the wire must be fixed tight around the bolt) [see Figure 5-12].

Figure 5-12 Steel wire on yoke



NOTE: Use the following parts: QUB00700 (bolt) and 154503 (steel wire).

Priming a New Pump

To prevent cavitation or air in the hydraulic system after installing a new pump or even when flushing the hydraulic system, make sure to prime the pump before starting the engine.

Apply the following procedure for any new installed pump:

1. Make sure the parking brake is applied and the vehicle is tagged out for maintenance purposes (refer to “Locking Out and Tagging Out the Vehicle” on page 12).

Danger!



Apply the lockout / tagout procedure at all times when maintenance or inspection is carried out on the vehicle.

2. With the ball valve closed, fill the suction line before installing it on the pump.
3. Fill the pump housing with new oil.
4. Reinstall the pressure hose on the pump housing.
5. Open the ball valve on the suction line.
6. Crank the engine repeatedly — about five times — without letting it start in order to fill the suction hose and the pump with hydraulic oil and to push the air back into the tank.

7. Start the engine. You can slowly raise the engine RPM only after 5 minutes. When you raise the RPM, always make sure that the pump does not make excessive noise.
8. Before putting the vehicle back in service, recalibrate the system pressures.

Inspecting the Hydraulic Tank

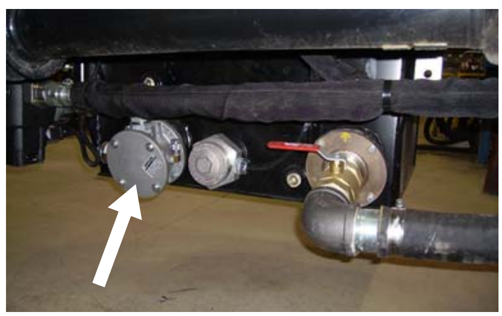
Verify that the oil in the tank is clean (not colored) and always at the appropriate level.

Caution! Maximum temperature for hydraulic oil is 77 °C (180 °F).

To inspect the hydraulic tank:

1. Lock out and tag out the vehicle (see *Locking Out and Tagging Out the Vehicle* on page 12).
2. Clean the strainer and replace the filter element inside the tank after the first 50 hours of service (see *Cleaning the Strainer* on page 153 and *Replacing Filter Elements* on page 154).

Figure 5-13 Filter housing element



For more information on maintenance schedule, see *AUTOMIZER™ Preventive Maintenance Chart* on page 22.

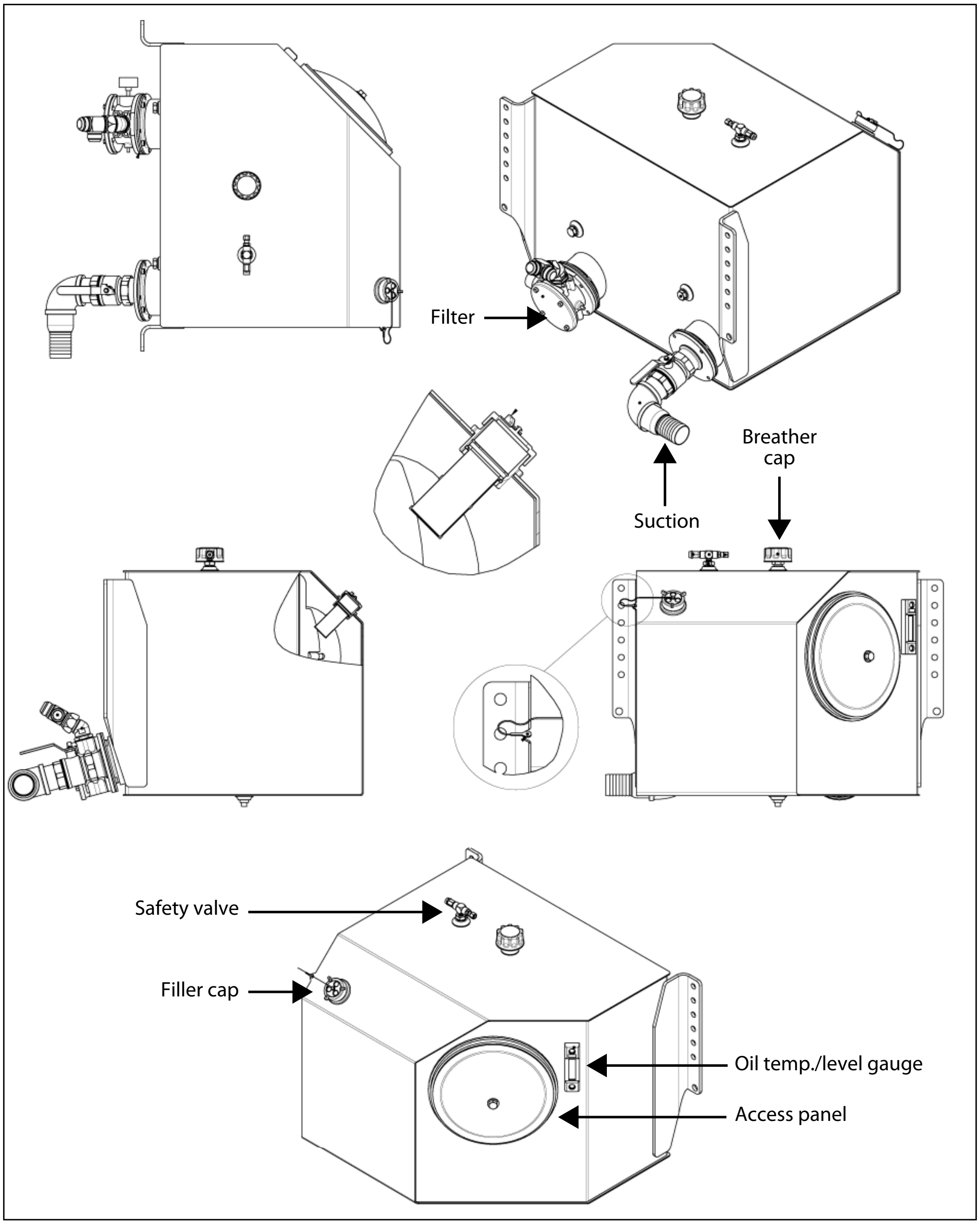
3. Make sure that the filler cap is not obstructed and works properly.
4. Make sure that the hydraulic oil is clean (not colored) and at least ¾ full on the oil level gauge (with all cylinders retracted).

   The complete system requires between 50 and 60 gallons of oil.

Figure 5-14 Oil temp/level gauge



Figure 5-15 Steel hydraulic tank

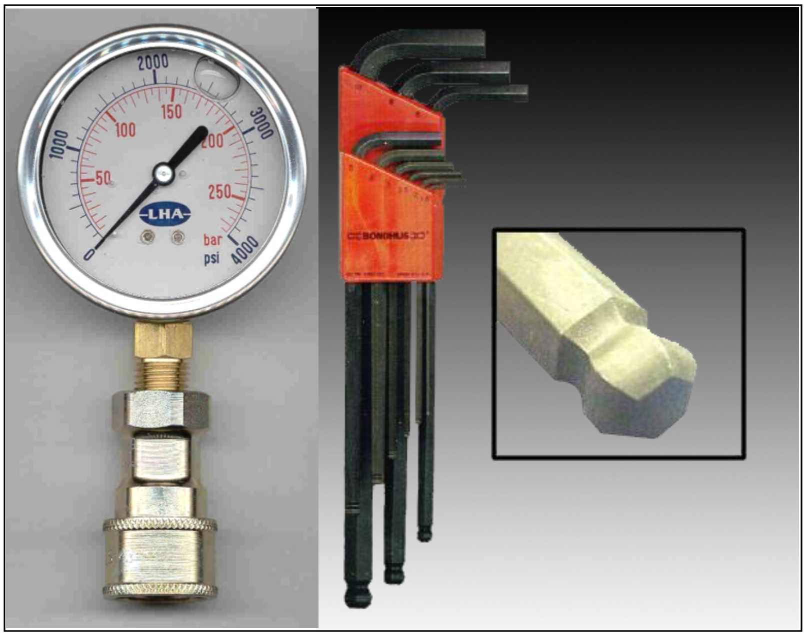


NOTE: The illustration above shows the model of hydraulic oil tank most often installed on our trucks. However, other models exist and your truck may be equipped with one of these.

Adjusting Pressure and Relief Valves

A 0–4000 psi pressure gauge as well as a set of ball-end hex keys are required to adjust pressure and relief valves (see Figure 5-16).

Figure 5-16 Pressure gauge and ball-end hex key



Adjusting Vane Pump Relief Valves (if equipped)

The body and arm sections of the dual vane pump may have their own relief valve on the dump valve; one located on the pump, the other on the chassis. Adjustment of vane pump relief valves must be done before adjusting the relief valve of the directional control valve.

The following pressure chart gives the proper adjustment pressure for body functions. Use this chart to adjust the relief valve for the body vane pump. For arm functions, see *Adjusting the Arm Vane Pump Relief Valve* on page 225.

Table 1 Pressure chart

Pump	Chassis	Cylinder bore (packer)	Main relief pressure (±50 psi)	Dump valve pressure (if equipped) (±50 psi)
Vane pump	6×4 (tandem axle)	4 inches	3,000 psi at idle	3,300 psi at idle
	4×2 (single axle)	4 inches	2,000 psi at idle	2,200 psi at idle

Figure 5-17 Relief valve on pump

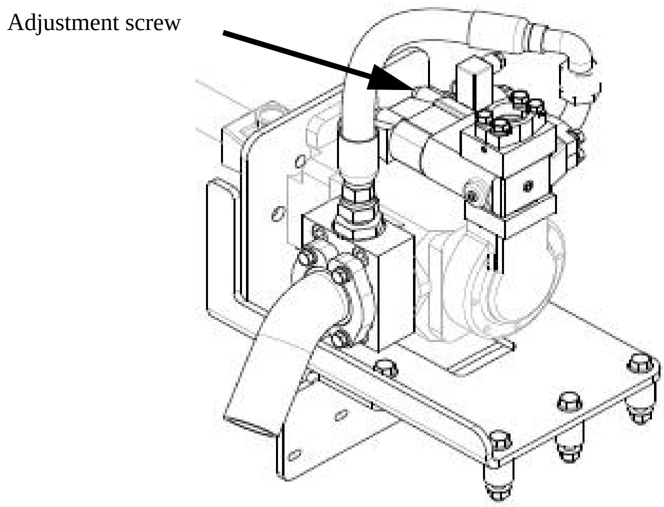
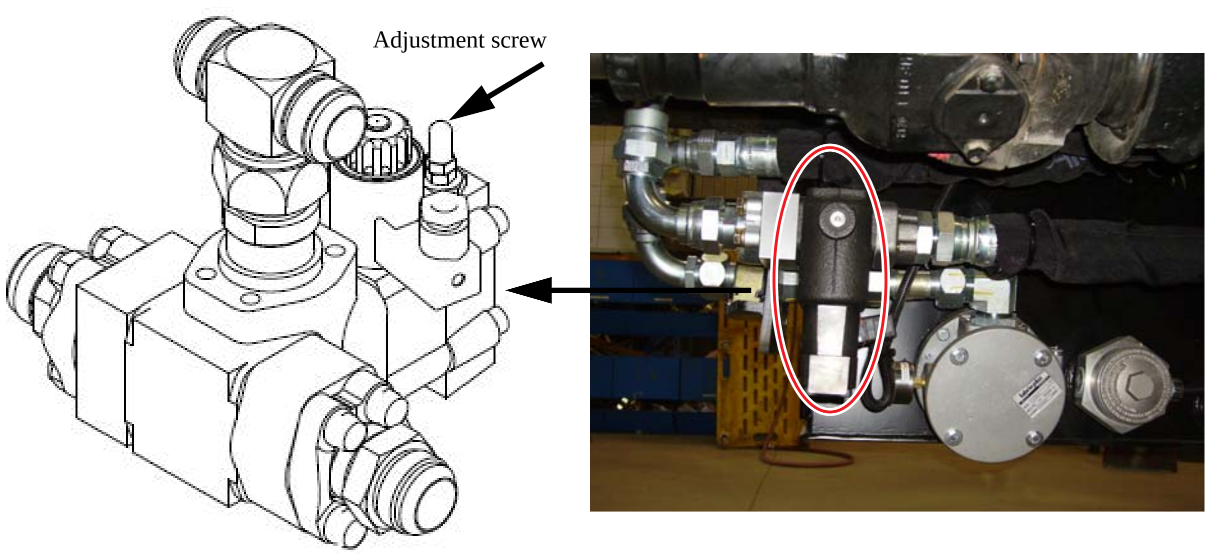


Figure 5-18 Relief valve on chassis



To adjust the body vane pump relief valve:

1. Lock out and tag out the vehicle (see *Locking Out and Tagging Out the Vehicle* on page 12).
2. Install the 0–4000 psi pressure gauge on the quick-connect fitting located at the valve inlet cover.
3. Start the engine and engage the hydraulic pump.
4. Release the body vane pump relief.

   To adjust the vane pump relief valve, tighten the main relief body valve adjustment screw (see *Adjusting Pressure on the Directional Control Valve* on page 141).
5. Disconnect the packer extend proximity switch. Activate the packer extend until it reaches the end of stroke.

6. Adjust the body vane pump relief valve according to the pressure chart (see Table 1).
7. Once the body vane pump relief valve is adjusted, back out the main relief.

IMPORTANT: When the body and arm vane pump relief valves are adjusted to the proper pressure, adjust the relief valve of the directional control valve according to the pressure chart (see page 139).

Adjusting Pressure on the Directional Control Valve

To adjust the pressure:

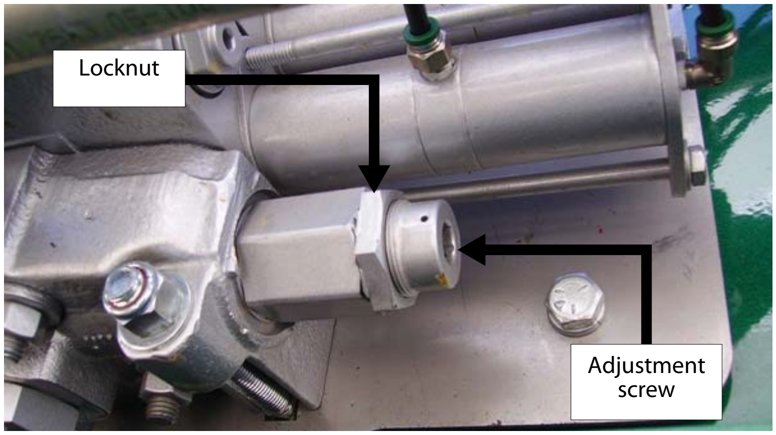
1. Start the engine and engage the hydraulic system.
2. Install a 0–4000 psi pressure gauge on the quick-connect coupler located on the hydraulic valve.

Figure 5-19 0–4000 psi pressure gauge



3. Disconnect the packer extend proximity switch. Activate the packer extend until it reaches the end of stroke.
4. Check the pressure on the gauge to make sure the pressure builds up in the system.
5. Adjust the directional control relief valve as needed by loosening the locknut and by turning the adjustment screw (see Figure 5-20). The pressure should be set to 3000 psi.

Figure 5-20 Relief valve



Using a ½” Allen key, turn the adjustment screw clockwise to increase pressure or counter-clockwise to reduce pressure.

Use a 1½” key to screw/unscrew the locknut.

6. Reconnect the packer extend proximity switch.

Adjusting the Body Relief Valve (Electro-Hydraulic)

To adjust the body relief valve:

1. Once the body vane pump relief valve is adjusted, back out the main relief (see F on Figure 5-21).
2. Install the pressure gauge at the valve inlet cover (see E on Figure 5-21).
3. Disconnect the packer extend proximity switch. Activate the packer extend until it reaches the end of stroke.
4. If this is not reading, adjust the utility section of the electric valve (see page 142).
5. Set the pressure at idle to 2000 psi for a single axle or to 3000 psi for tandem chassis.

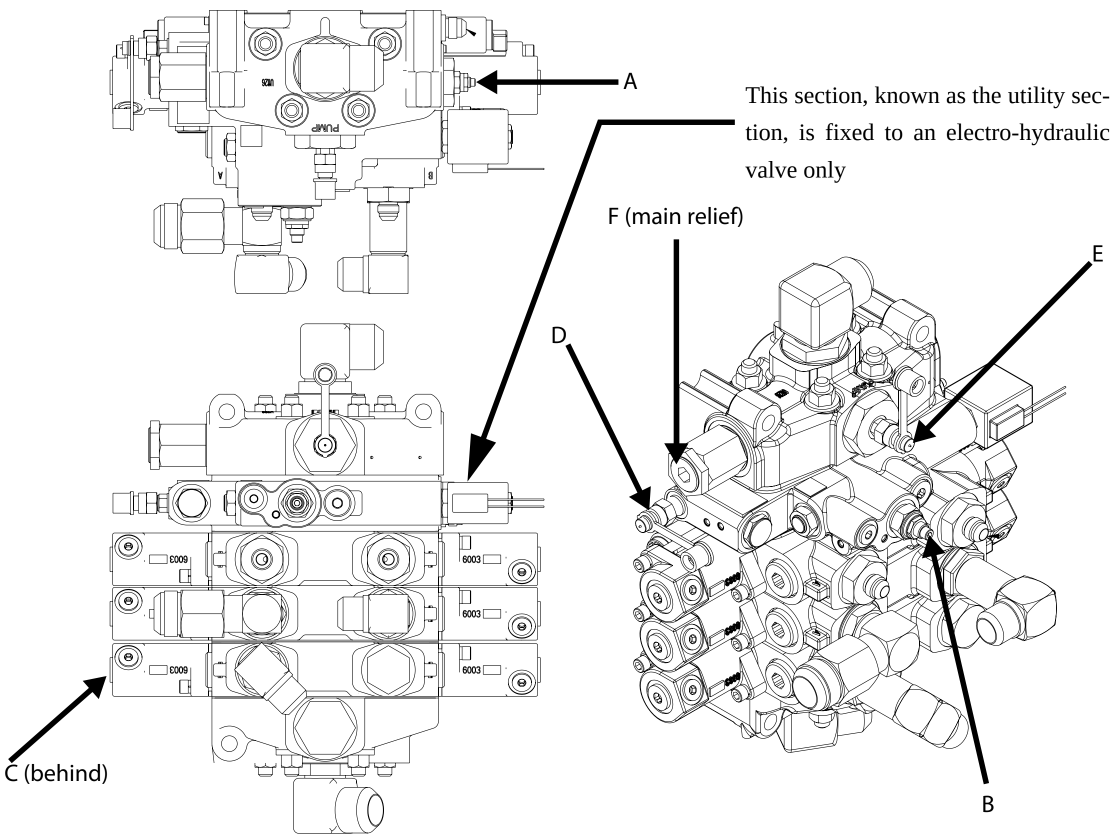
Adjusting the Utility Section (Optional Electric Valve only)

To adjust the utility section:

1. Disconnect the tailgate solenoid.
2. Turn on the pump; press the TAILGATE DOWN switch on the control panel.
3. Connect a 0–600 psi pressure gauge to the inlet cover (see E on Figure 5-21).
4. Back out the generated pilot pressure valve (see A on Figure 5-21) and the pressure reducing valve (see B on Figure 5-21).
5. Disconnect the body-up coil (see C on Figure 5-21).
6. With the engine at idle, adjust the generated pilot pressure (see A on Figure 5-21) to 420 psi (±30 psi) while the Body Up function is activated. The valve adjustment screw is located on the right-hand side of the valve section when facing it.
7. Reconnect the body-up coil.

8. Remove the pressure gauge from the inlet cover and install it on the maximum pilot pressure port (see D on Figure 5-21).
9. Disconnect the packer extend proximity switch. Activate the packer extend until it reaches the end of stroke.
10. Adjust pilot pressure to 550 psi (±50 psi) using the adjustment screw located at the front of the valve (see B on Figure 5-21).
11. Test the valve. The valve should shift sharply.

Figure 5-21 Valves and ports



Adjusting Pressure on the Proportional Valve

AUTOMIZER™ vehicles use an extra valve stack to control the arm, the chute, and the crusher panel (if equipped). This valve is of the proportional type, meaning that the amount of flow coming out of it will be according to the position of the spool.

Levers are delivered with the vehicle to make the pressure adjustment.

IMPORTANT: Before making any adjustments to the lifting arm proportional valve, the dump valve pressure (if equipped) must have been properly set. For more information on adjusting dump valve pressure, see *Adjusting Pressure and Relief Valves* on page 139.

Refer to the hydraulic pressure table to adjust each function of the lifting arm. Before performing the procedure, make sure that all function levers and their adjustment screws have been properly identified on the valve.

NOTE: A helper may be needed when adjusting arm pressure. Use all necessary safety precautions around the vehicle at all times.

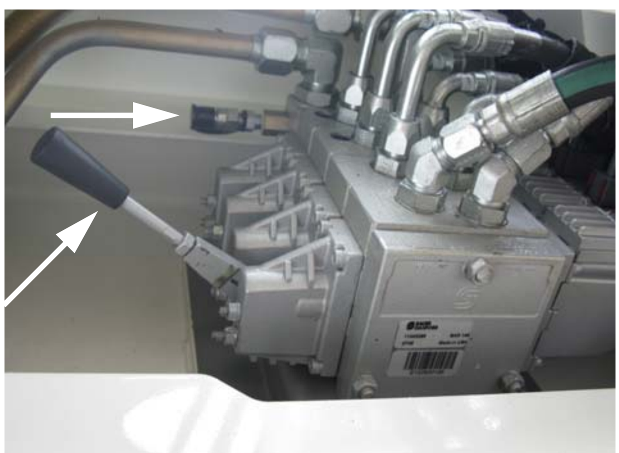
To adjust the proportional valve main relief pressure:

1. Secure the arm working area using safety tape or barricades.

Warning! Stay out of the path of the arm while manually moving the Right Hand™. Failure to do so may result in severe injury, or even death.

2. Install the lever on the proportional valve to adjust.
3. Move the lever back and forth to remove any residual hydraulic pressure in the system.
4. Connect a 0–4000 psi gauge on the quick coupler located on the proportional valve.

Figure 5-22 Control lever and quick coupler



Warning! Make sure that the ball valve on the suction line is completely open before starting the engine. Failure to do so may damage the hydraulic system.

5. Start the engine and engage the hydraulic system.
6. Retract and maintain the arm to the end of its stroke using the lever.
7. Adjust the main relief valve to 2000 psi (2700 psi in case of a 300-gallon gripper) using the adjustment screw. Turn the hex wrench clockwise to raise pressure, or counterclockwise to lower pressure.

Figure 5-23 Main relief valve adjustment screw



Adjusting Chute Pressure (Co-Mingle Vehicles)

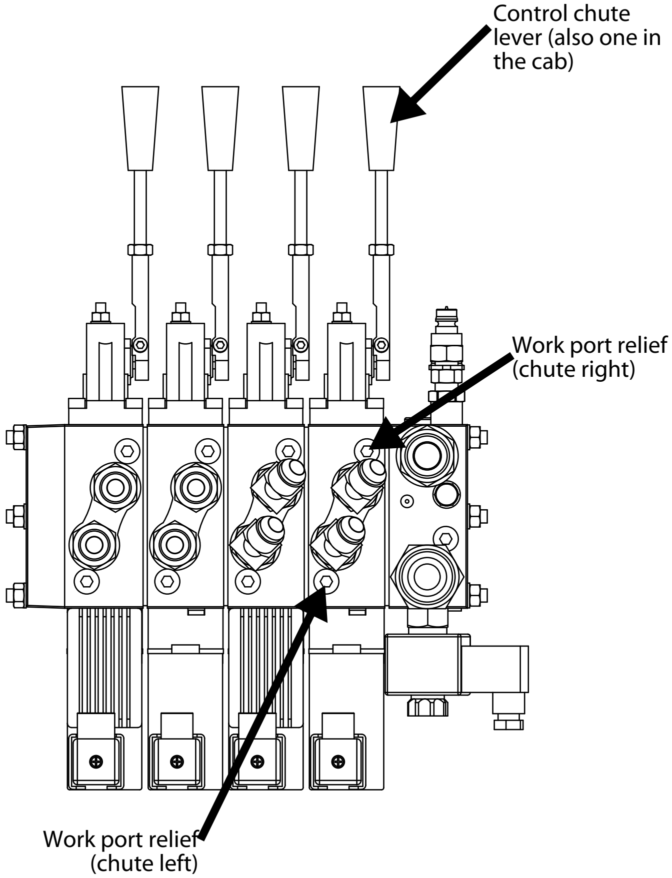
To calibrate the working pressure of the chute:

1. Secure the arm working area using safety tape or barricades.

Warning! Stay out of the path of the arm while manually moving the Right Hand™. Failure to do so may result in severe injury, or even death.

2. Start the engine and engage the hydraulic system (pump switch ON).
3. Activate the chute manually with the control lever (see Figure 5-24) until the cylinder reaches the end of its stroke (chute towards the left or right).

Figure 5-24 Control levers



4. Take a reading of the maximum pressure at this point.
5. With the proper hex key, tighten or loosen the work port relief valve screw so as to adjust the chute pressure to 1200 psi.

Adjusting Pressure on 96-Gallon Grippers

Danger! Do not stand directly in the path of the arm while carrying out these adjustments.

The section of the proportional valve that controls the gripper is located on the right-hand side of the valve, and it is equipped with a built-in relief valve that allows gripper pressure adjustment.

To adjust the 96-gallon gripper built-in relief valve:

1. Lock out and tag out the vehicle (see *Locking Out and Tagging Out the Vehicle* on page 12).
2. Secure the area around the path of the arm with barrier tape or barricades.
3. Move the manual levers back and forth to release any residual pressure.

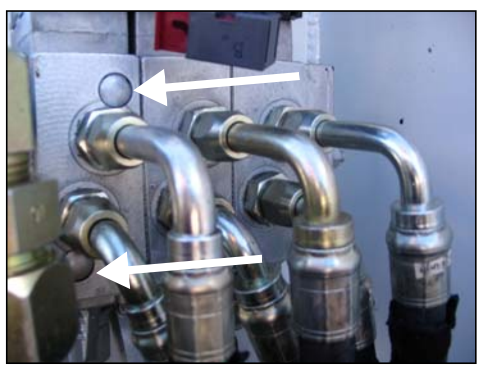
4. Make sure that all hoses are tight and not leaking.
5. Connect a pressure gauge (0–4000 psi) to the quick-connect coupler on the proportional valve (see Figure 5-25).

Figure 5-25 Installing the pressure gauge



6. Put the transmission in Neutral, start the engine and engage the hydraulic pump.
7. Adjust gripper pressure:
   - **7 a.** Close the gripper using the corresponding lever on the valve.
   - **7 b.** While maintaining the lever in place, adjust the relief valve of the "gripper close" side of the valve section to 1200 psi[1] (screw or unscrew depending on the gauge readout).
   - **7 c.** Open the gripper and maintain the lever in place.
   - **7 d.** Adjust the pressure of the "gripper open" load/sense relief valve to 1200 psi.

Figure 5-26 Gripper load/sense relief



Adjusting High Pressure on 300-Gallon Grippers

To adjust high pressure on 300-gallon gripper built-in relief valves:

1. Lock out and tag out the vehicle (see *Locking Out and Tagging Out the Vehicle* on page 12).
2. Secure the area around the path of the arm with barrier tape or barricades.

1. **Reference value varies according to use. This pressure can be adjusted according to customer's needs.**

3. Set the switch on the control panel to HIGH PRESSURE and move the manual levers back and forth to release any residual pressure.
4. Make sure that all hoses are tight and not leaking.
5. Connect a pressure gauge (0–4000 psi) to the quick-connect coupler on the proportional valve (see Figure 5-27).

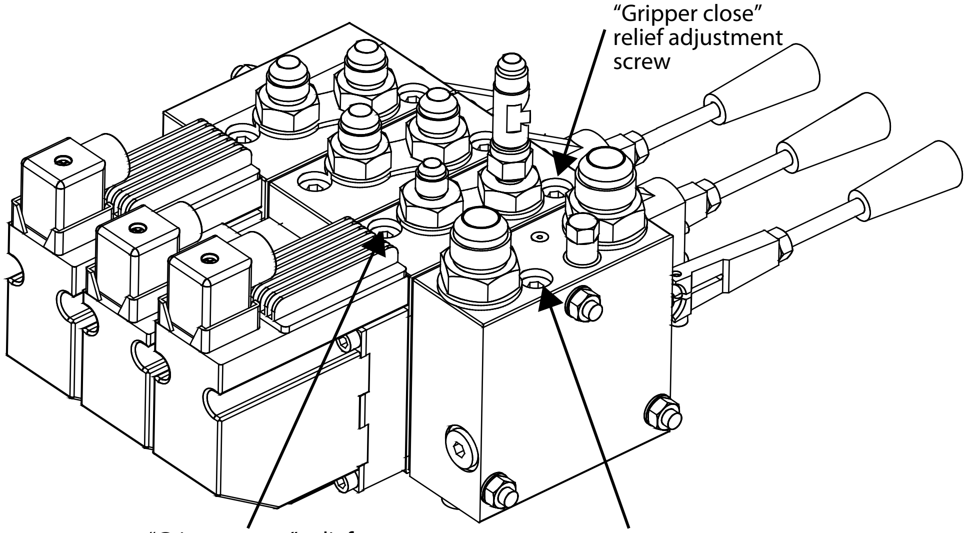
Figure 5-27 Installing pressure gauge



6. Put the transmission in Neutral, start the engine, and engage the hydraulic pump.
7. Adjust the gripper pressure:
   - **7 a.** Close the gripper using the corresponding lever on the valve.
   - **7 b.** While maintaining the lever in place, adjust the relief valve of the "gripper close" side of the valve section to 1800 psi[1] (screw or unscrew depending on the gauge readout).
   - **7 c.** Open the gripper and maintain the lever in place.
   - **7 d.** Adjust the pressure of the "gripper open" load/sense relief valve to 1200 psi.

1. **Reference value varies according to use. This pressure can be adjusted according to customer's needs.**

Figure 5-28 Relief adjustment screws



Adjusting Low Pressure on 300-Gallon Grippers

To adjust low pressure on 300-gallon gripper built-in valves:

1. Lock out and tag out the vehicle (see *Locking Out and Tagging Out the Vehicle* on page 12).
2. Secure the area around the path of the arm with barrier tape or barricades.
3. Turn the switch on the control panel to the LOW PRESSURE position and move the manual levers back and forth to release any residual pressure.
4. Make sure that all hoses are tight and not leaking.
5. Connect a pressure gauge (0–4000 psi) to the quick-connect coupler on the proportional valve (see Figure 5-27).
6. Put the transmission in Neutral, start the engine, and engage the hydraulic pump.
7. Adjust the gripper pressure:
   - **7 a.** Close the gripper using the corresponding lever on the valve and maintain the lever in place.
   - **7 b.** Adjust the external relief valve to 1200 psi (see Figure 5-29).

Figure 5-29 External relief valve adjustment screw

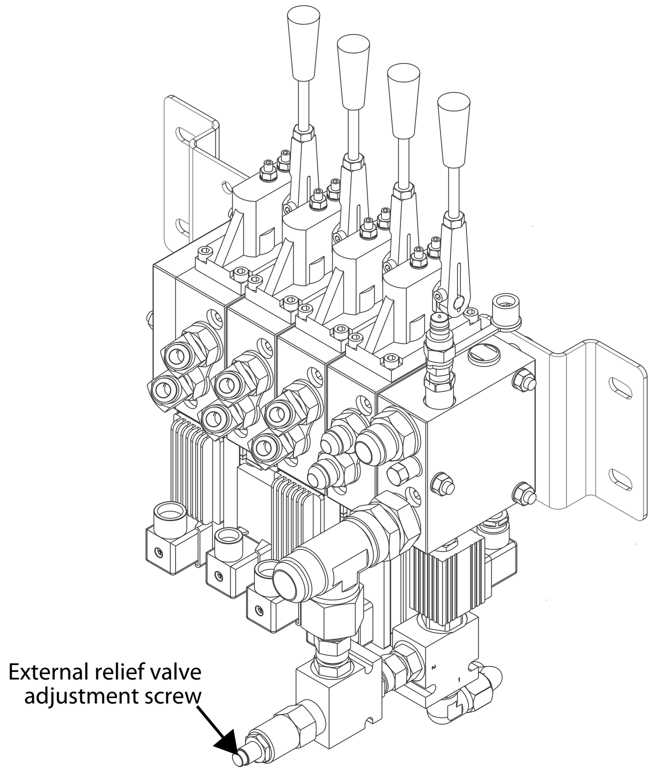
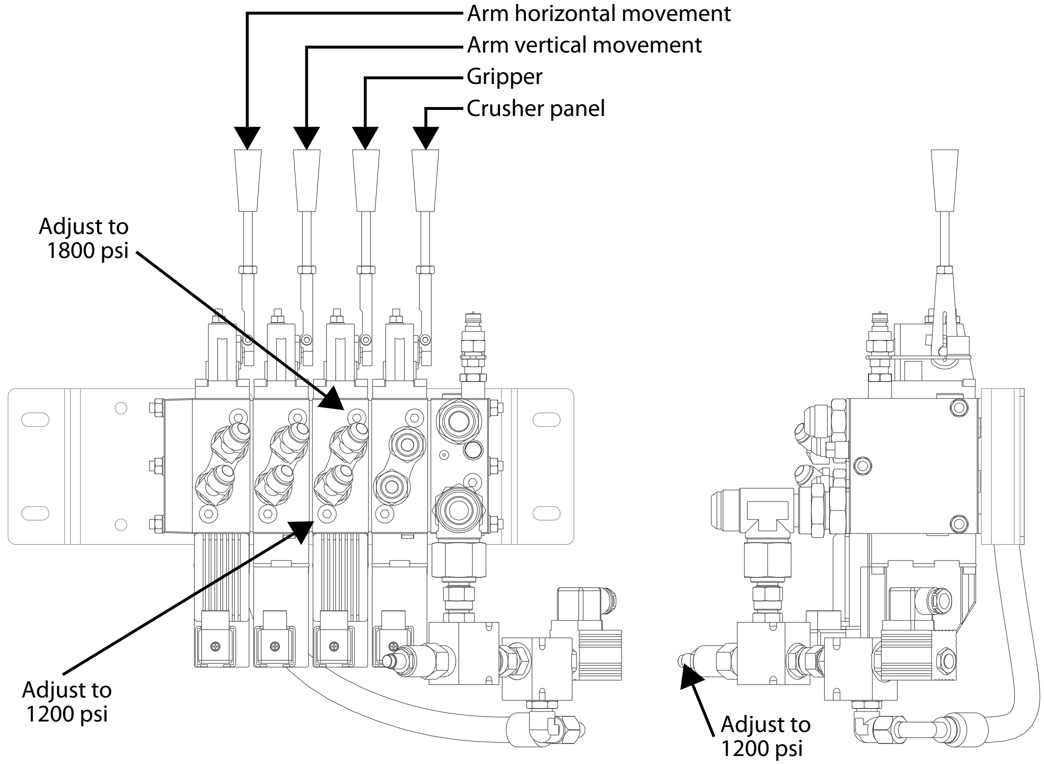


Figure 5-30 Pressure adjustment values



Pressurizing the Tank System

NOTE: For chassis-mounted tanks only. No pressurization is needed for behind-the-cab mounted tanks; gravity is enough to cause the oil to flow.

Cavitation inside the pump generates excessive wear and noise.

To prevent cavitation, air pressure inside the hydraulic tank must be set between 3 and 3.5 psi. A gauge and a pressure regulator are installed to adjust air pressure inside the tank. This gauge is located inside the frame rail on the curbside of the chassis; it can be accessed only when the body is raised.

Danger! Install body safety prop before performing any work under the body.

To adjust the pressure, turn the knob until the pressure reaches 3 to 3.5 psi. The hydraulic tank is also equipped with a 5-psi relief valve and a pressurized screw-on filler cap.

Figure 5-31 5-psi relief valve and breather cap

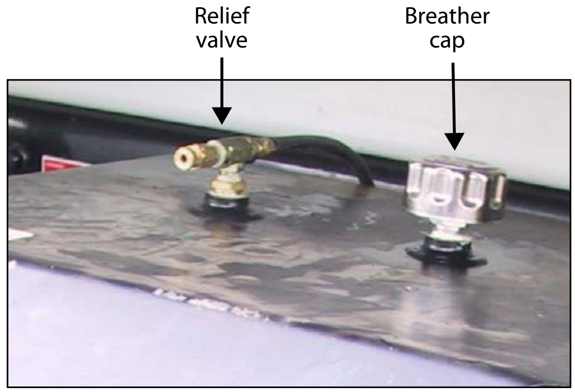
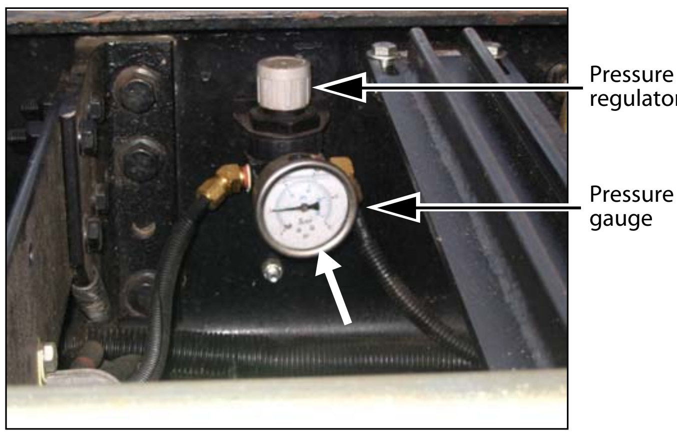


Figure 5-32 Pressure gauge and regulator



Caution! The air pressure inside the tank shall not exceed 5 psi.

Emptying the Hydraulic Tank

To empty the hydraulic tank:

1. Prepare the vehicle accordingly:
   - 1 a. Apply the parking brake
   - 1 b. Start the engine
   - 1 c. Engage the hydraulic pump
   - 1 d. Retract all cylinders (packer, crusher panel, tailgate, etc.)
   - 1 e. Raise the body and install the safety prop
   - 1 f. Disengage the hydraulic pump

1 g. Stop the engine

2. Lock out and tag out the vehicle (see *Locking Out and Tagging Out the Vehicle* on page 12).
3. Clean around the filler cap and remove it.

Caution! Some hydraulic tanks are pressurized (3 to 5 psi). Open the filler cap slowly.

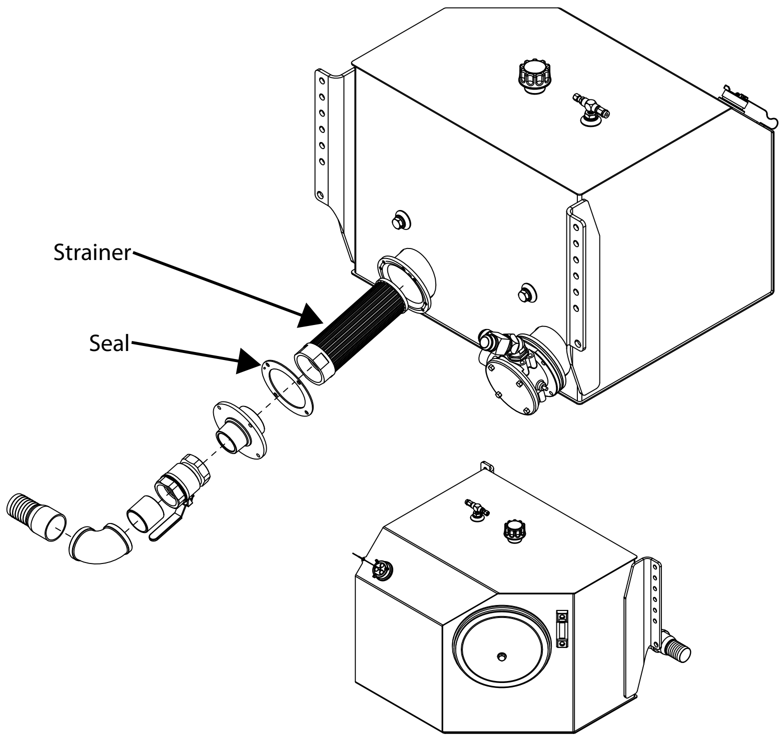
4. Place a clean container (minimum capacity: 60 gallons) under the drain plug.
5. Remove the drain plug under the tank and let the tank drain completely.
6. Reinstall the drain plug.

Cleaning the Strainer

To clean the strainer:

1. Empty the hydraulic tank (see *Emptying the Hydraulic Tank* on page 152).
2. Remove the hose clamp from the suction hose.
3. Slide the hose over the pipe until it clears the ball valve (slide towards the frame of the vehicle).
4. Remove the strainer from the tank port (see Figure 5-33).
5. Clean the strainer using solvent, and check for damage; replace if necessary.
6. Replace the seal (if necessary).
7. Reinstall the strainer.

Figure 5-33 Strainer assembly on steel tank

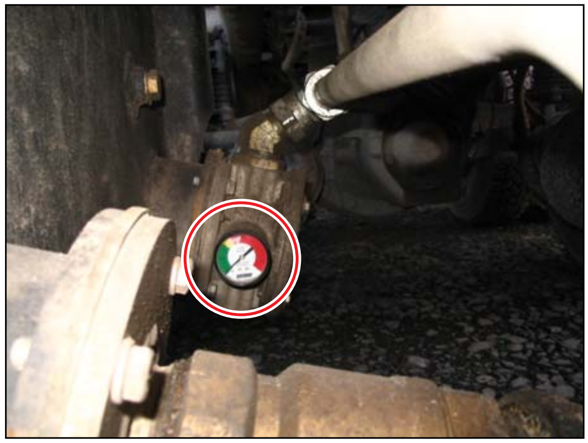


Replacing Filter Elements

IMPORTANT: To protect new components of the hydraulic system, the return filter element must be changed after the *first* 50 hours of operation of the vehicle. Change the element twice a year afterwards (see *AUTOMIZER™ Preventive Maintenance Chart* on page 22).

The filter restriction indicator will indicate, when the engine is running, if the filter needs to be changed. Replace the filter before the indicator reaches the red zone. This will keep the oil clean, extend component life expectancy and reduce failures.

Figure 5-34 Filter restriction indicator (steel tank)

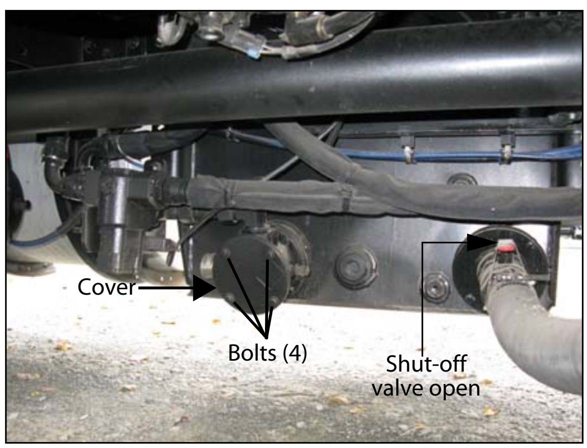


To replace the hydraulic filter:

1. Lock out and tag out the vehicle (see *Locking Out and Tagging Out the Vehicle* on page 12).
2. Prepare a pan or a bucket to collect the oil that will come out of the filter housing (two gallons of oil).
3. Remove the filter head cover bolts (four).

   This in-tank return filter system contains a check valve that closes when the cartridge is removed, thus preventing the whole tank from draining.

Figure 5-35 Filter head cover and retaining bolts (cylindrical tank)



4. Replace the filter element with a new one.

Figure 5-36 Filter element



5. Reinstall the filter head cover.

Replacing Hydraulic Oil

Caution!



Highly contaminated hydraulic fluid must be changed promptly to avoid damaging the hydraulic system.

To do so:

1. Empty the hydraulic tank (see *Emptying the Hydraulic Tank* on page 152).
2. Clean the strainer (if necessary) (see *Cleaning the Strainer* on page 153).
3. With a clean dry cloth, remove all metal particles and debris accumulated at the bottom of the hydraulic tank:
   - **3 a.** Remove the screws retaining the access panel.
   - **3 b.** Insert your hand inside and clean the interior with a dry clean cloth.
4. Change the return filter element (see *Replacing Filter Elements* on page 154)
5. Using a filtering screen, refill the tank with high-quality oil until it reaches the ¾ mark on the oil gauge (see *Recommended Lubricants* on page 99 for specifications).

   The entire system will require between 50 and 60 gallons of oil.

Caution!



It is not recommended to mix different brands and/or grades of oil in the hydraulic tank.

6. If the suction line has been replaced, fill the line until oil reaches the pump (see *Pump Cavitation* on page 178).

7. Reinstall the filler cap and fully open the ball valve.

Caution! Failure to open the ball valve may seriously damage the pump and the hydraulic system.

8. Prime the pump (see *Priming a New Pump* on page 136).
9. Start the engine.

Inspecting Hydraulic Cylinders

Danger! Always lock out and tag out the vehicle when inspecting or performing maintenance on the vehicle (see *Locking Out and Tagging Out the Vehicle* on page 12).

You must inspect all hydraulic cylinders at least once a month.

When you do so:

1. Make sure that the ball valve on the suction line is completely open before starting the engine.

Warning! Failure to open the ball valve may damage the hydraulic system.

2. Make sure that connections between all hoses and pipes are tight, and that no oil is leaking.

   Leaking or otherwise faulty cylinders must be repaired or replaced immediately.
3. Make sure that all cylinder caps are firmly set and that there are no leaks.
4. Using a straight edge, make sure that cylinder rods are straight.
5. Lubricate and inspect all cylinders' mounting points (pins, retaining bolts, etc.).

Detecting Cylinder Internal Leaks

An internal leak is caused by a damaged seal inside the hydraulic cylinder (see 1 on Figure 5-37). Because the cylinder is leaking oil inside (bypassing), a certain amount of pressure is lost, reducing the efficiency of the cylinder and its capacity to push and/or pull.

If the packer cylinders are bypassing, the seal inside the cylinder may need to be replaced.

To detect internal leaks in packer cylinders:

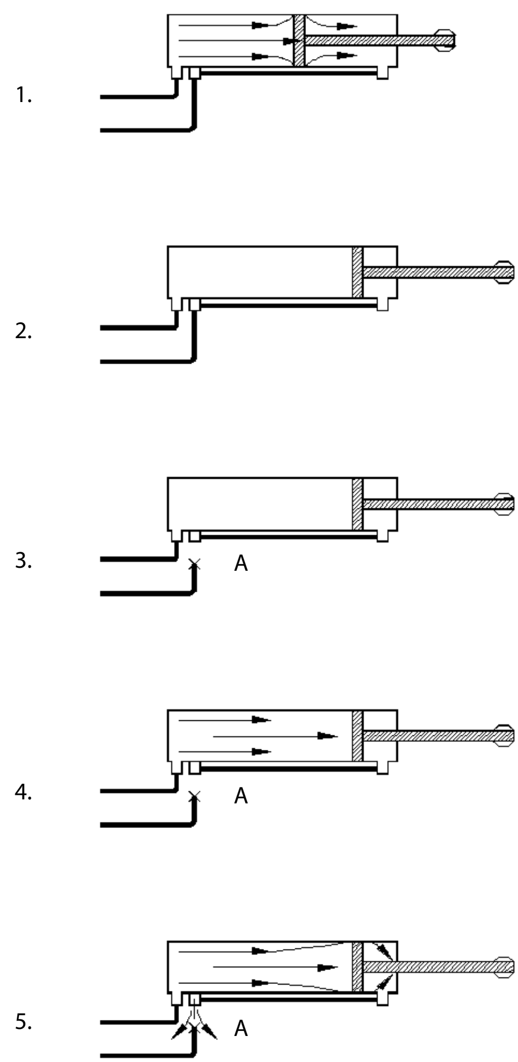
1. Apply all safety measures, and set the parking brake.

2. Pull on the red emergency STOP button.
3. Start the engine and engage the hydraulic pump.
4. Fully extend the packer cylinders, then disengage the hydraulic pump.
5. Disconnect the packer extend proximity switch.

   This prevents the packer from returning to its initial position.
6. Disconnect and plug hose "A".
7. Engage the hydraulic pump.
8. Push the green button and see if oil is leaking from port "A", then push the emergency STOP button.

   If oil leaks out of port "A" when pressure is applied, there might be an internal leak; replace or repair the cylinder.

Figure 5-37 Detecting cylinder internal leaks



6

Electrical System

This chapter is divided into two sections. The first section describes how the electrical components work and the second section describes how to adjust and repair the electrical components.

How the Electrical System Works

The electrical system includes the following components:

- Control panel
- Electronic controllers
- Harnesses
- Valve controls
- Limit/proximity switches
- Sensors (ex. temperature, pressure sensors)

Electrical Schematics

Electrical schematics are provided as part of the AUTOMIZER™ documentation package, located inside the cab.

The electrical schematics show how components are wired to each other. These schematics are useful when diagnosing electrical circuits and should be kept for future reference.

Control Panel

The control panel is located at the center of the cab.



The control box is centrally mounted in the cab. It includes push buttons, toggle switches, and warning lamps. Autocar ACX has an integrated control panel in the dashboard. Some units also have auxiliary controls located under the curbside seat. Other units also have external controls usually located on the body curbside.



The IFM multiplex electronic controller makes the truck more reliable by reducing the number of wires and components. Electrical maintenance is different from relay logic. The use of this electronic controller enables mechanics to perform troubleshooting, which facilitates the debugging process.

Labrie Enviroquip Group offers training on this technology. To know more about electronic controllers and training schedule, please call Labrie*Plus*.



Proximity switches control packer and tailgate operations, and provide the means for safety lockouts.



Limit switches are used where there is "large" movement between components and the limited range of the proximity switch is not permitted.



Harnesses connect all electrical components. They are generic and therefore may contain wires and connectors that are not used. Make sure unused connectors are always protected by a cap in order to avoid electrical failure.

Adjusting and Repairing Electrical Components

The required electrical system adjustments include:

- Circuit breakers and fuses
- Adjusting limit and proximity switches
- Packer fully retracted proximity switch
- Packer fully extended proximity switch
- Hopper door proximity switch
- Tailgate unlocked proximity switch
- Tailgate fully open proximity switch (optional)
- Arm stowed limit switches (2)
- Arm mid-height limit switches (2)
- Crusher panel limit switch
- Body-raised limit switch

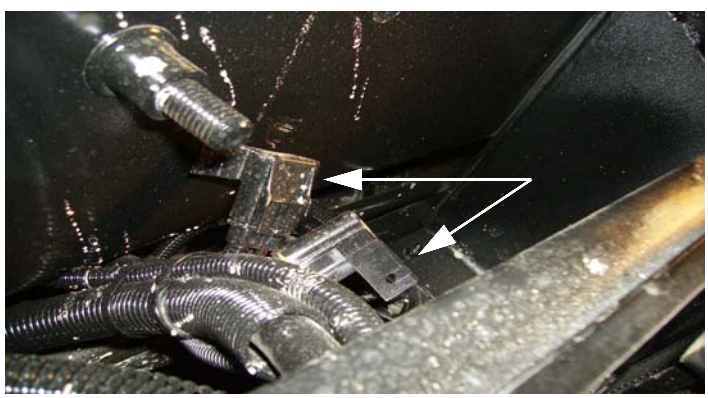
For information on limit and proximity switch adjustment, go to page 78 and the following.

Fuses and Circuit Breakers

Power for the electrical system is protected by two fuses (a 30A and a 40A) and up to 6 manual reset circuit breakers (depending on the options installed).

Fuses
The two fuses (a 30A and a 40A) protecting the main battery power supply are located on the ignition relay.

The 40A circuit is subdivided into 2 circuits of 10A and 30A protected by in-line fuses.



Circuit breakers

There is a button on the circuit breaker of the relay box located inside the cab. Pushing this button resets the breaker.



Important Never hold down the reset button when the reset operation fails. This may result in severe electrical damage. Report this problem to your supervisor and maintenance department.

NOTE: Consult the OEM manual for information on equipment not manufactured by Labrie Enviroquip Group.

The following table provides a description of the circuit breakers located in the control box inside the truck cab.

Function	Ampere	Circuit Number
Monitor (W2)	7.5	141
Cab fan (W3)	15	135
Scale Air-Weigh System power & acc. (W4)	10	161
Electronic controller (W5)	10	168

7

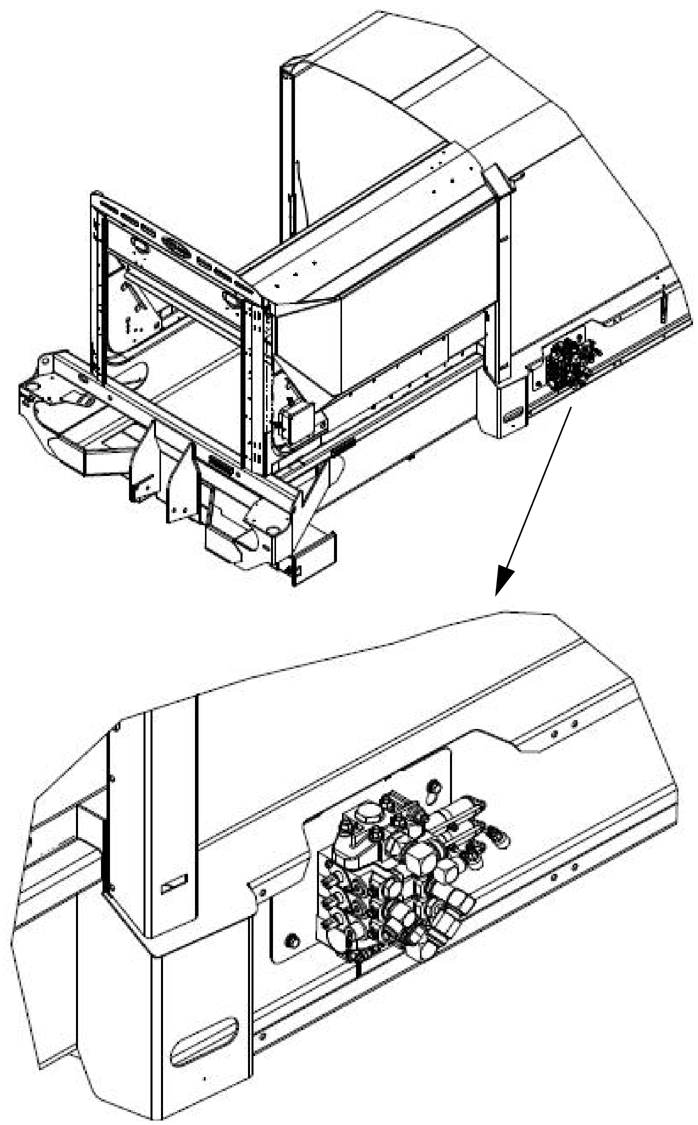
Pneumatic System

The air (pneumatic) system is crucial for efficient brake and body operation.

NOTE: Before searching for parts, identify the type of cab of your unit (cab over or conventional). The mounting of some components for the body depends on the type of cab configuration.

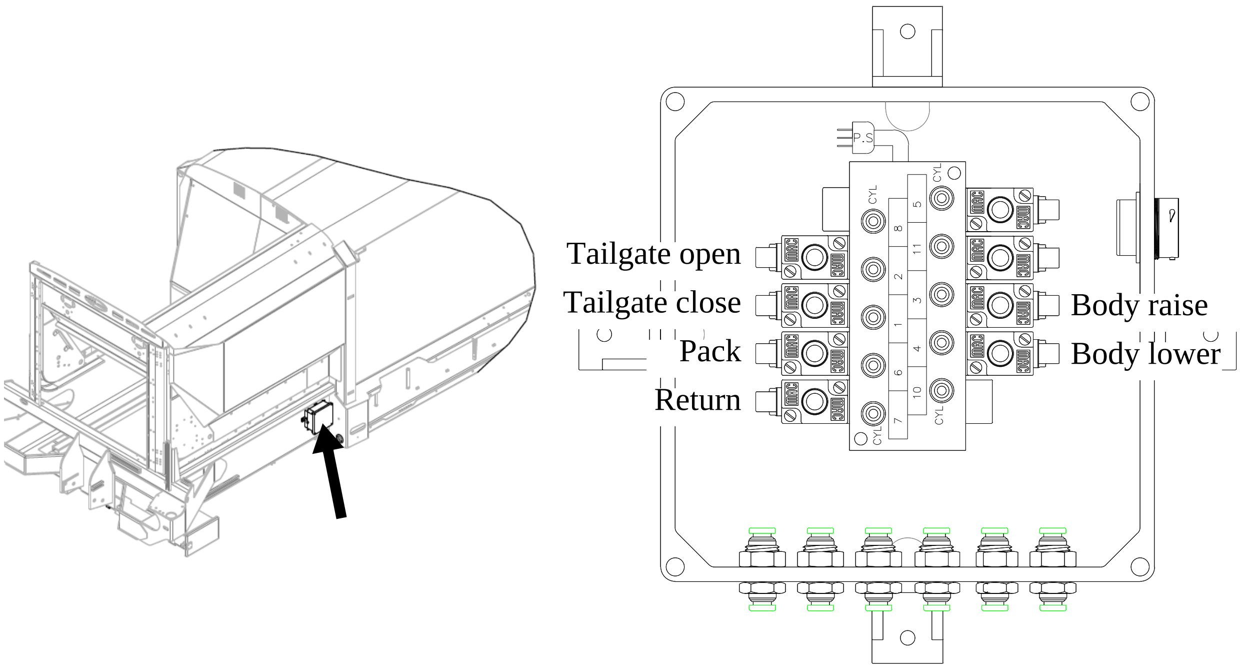
The main hydraulic valve, which controls body functions, is activated by air actuators.

Figure 7-1 Air actuators



When the tailgate or body switch on the control panel is activated, the corresponding solenoid valve in the air control box (see Figure 7-2) sends air to the corresponding air actuator on the main valve. This results in a movement of the hydraulic spool inside the valve.

Figure 7-2 Air control box



The packer system is similar except that the electric signal goes through the electronic module, located on the truck body, before reaching the air control box. For more details, see page 169.

To avoid affecting control of the packer or other air systems on the vehicle (especially under cold weather conditions), you must maintain the air system regularly: drain the air tanks, the water trap, and the air filter at the end of every working day. The air filter element must be replaced every 1000 hours.

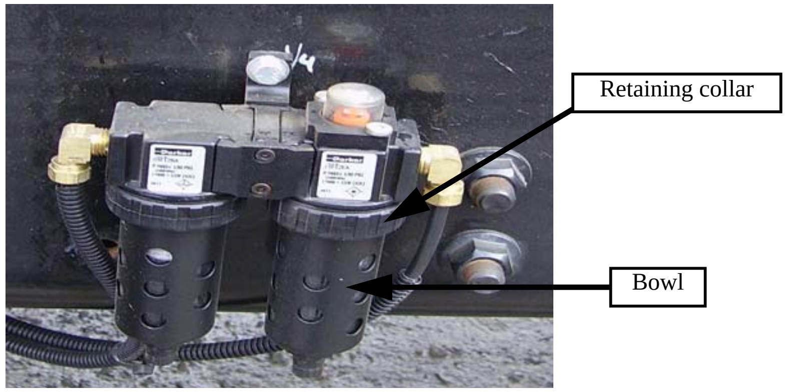
To do so:

1. Lock out and tag out the vehicle (see *Locking Out and Tagging Out the Vehicle* on page 12).
2. Shut off air supply and depressurize the unit before servicing.
3. Unscrew the retaining collar.
4. Unscrew the bowl.

NOTE: Avoid scratching internal surfaces.

5. Replace the air filter element.
6. Reverse the procedure to reinstall the other components (bowl and retaining collar).
7. Apply system pressure.
8. Check for air leaks.
9. In case of air leaks, *do not* operate. Conduct servicing again.

Figure 7-3 Air filter

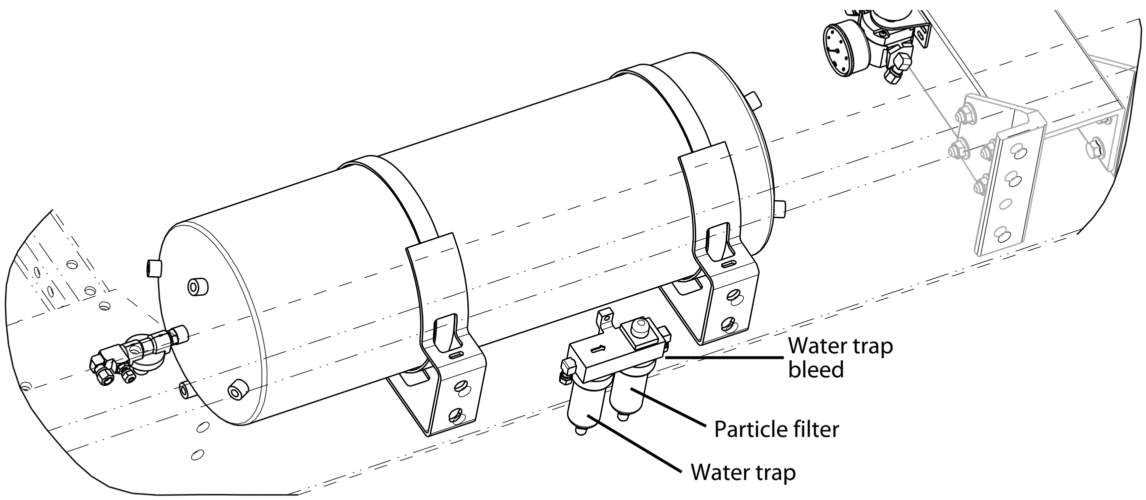


To bleed the water trap, do the following:

1. Lock out and tag out the vehicle (see *Locking Out and Tagging Out the Vehicle* on page 12).
2. Using a rag, unscrew the drain cocks.

   This will bleed all the water from the water trap and the air filter bowl located on the chassis. This water trap helps keep residual moisture out of the body air system.

Figure 7-4 Bleeding the water trap



3. Drain all air tanks.

Figure 7-5 Drain valve

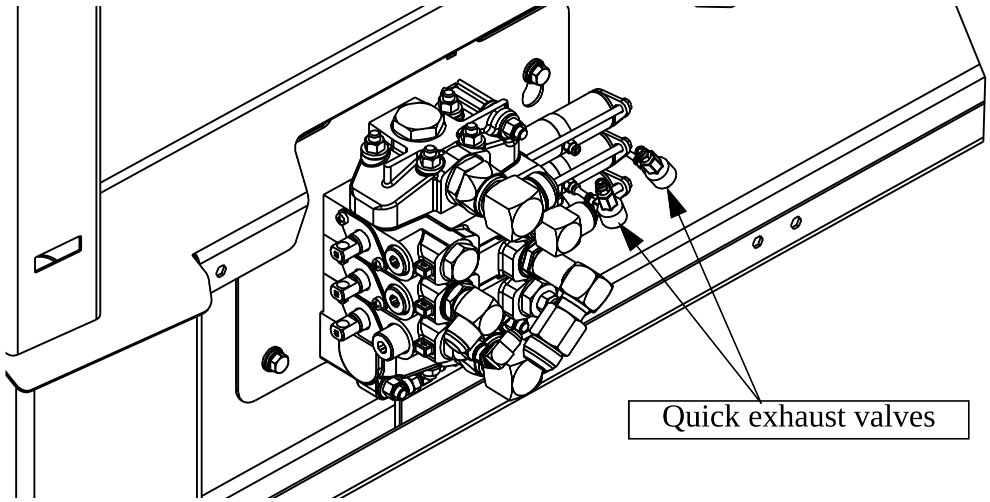


IMPORTANT: Pay particular attention to the dryer cartridge. On this type of equipment, the compressor works all the time (frequent use of the brake system). As a result, lots of moisture is injected into the air system. For more information, see *Air Dryer* on page 168.

Introducing the Packer Air System

The hydraulic valve, which controls some of the hydraulic functions, is equipped with air actuators. The packer air actuator pushes back and forth on the hydraulic spool of the valve, resulting in a movement of the packer (extension or retraction).

Figure 7-6 Packer air actuator



As the packer reaches the end of a stroke, the proximity switch, located behind the packer, sends a signal to the electronic module to indicate that the packer has reached the end of its stroke. The multiplex module then operates the air solenoid valve, inside the air control box, with a 12-volt signal (one signal for packer extend, one signal for packer retract).

When receiving the 12-volt signal (extend or retract) from the module, the air solenoid valve enables the air pressure to reach the actuator on the main control valve. The spool moves according to the signal received.

Two quick exhaust valves, located close to the body main valve (see Figure 7-6), are designed to release air pressure from the packer air actuator installed on the main control valve. They release air when the packer reaches the end of a stroke, allowing the spool to move in the opposite direction and accelerate air release in the actuator.

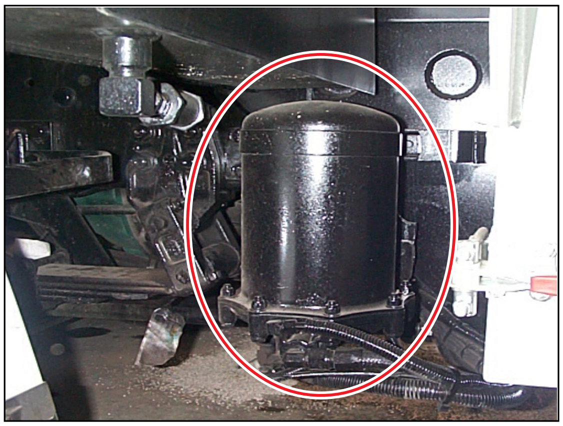
Air Dryer

Units are equipped with an air dryer and/or alcohol evaporator.

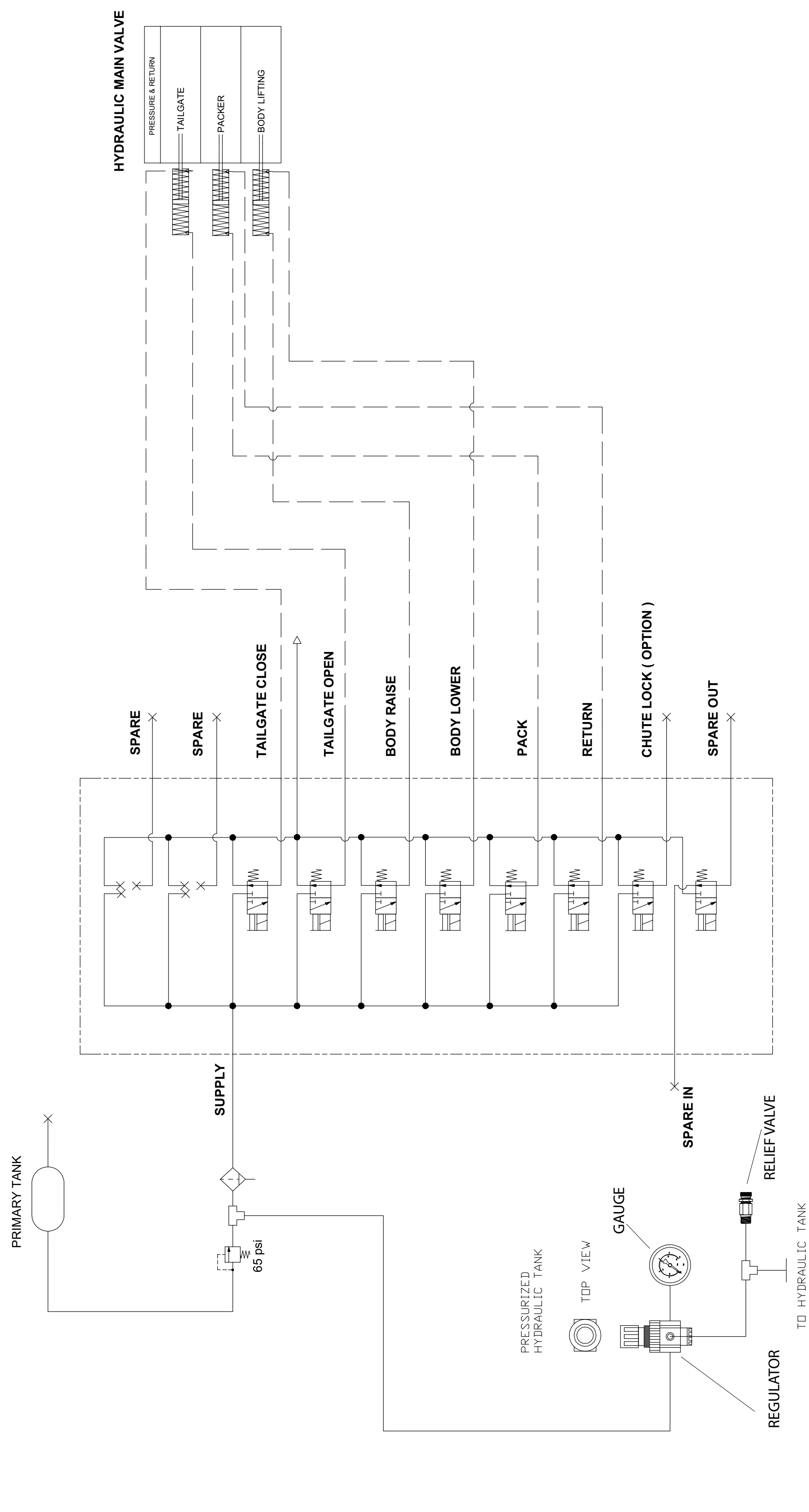
These devices are used to reduce water in the air system, preventing corrosion or freezing of the air components in cold weather.

Maintenance on the air dryer and/or alcohol evaporator is covered in the chassis manufacturer's maintenance manual.

Figure 7-7 Air dryer



Pneumatic System Schematic



8

Troubleshooting

This chapter contains information to help you narrow down and/or solve problems that might occur with your AUTOMIZER™. Procedures throughout this chapter require that the people performing troubleshooting tasks have basic knowledge in electrical, hydraulic and pneumatic systems.

The employer shall ensure that maintenance personnel is properly trained prior to starting troubleshooting.

Before performing maintenance on a vehicle, make sure that all safety procedures are applied. The lockout/tagout procedure outlined on page 12 is mandatory.

See *Troubleshooting Guide* on page 174 to resolve commonly seen problems, or contact Labrie*Plus* to talk to one of our product specialists.

IMPORTANT: Schematics provided in this manual are for reference only. Vehicle-specific schematics are provided in the vehicle's cab.

Tools

When trying to pinpoint the cause of a problem on a vehicle, you need certain tools to test components (pneumatic, hydraulic or electrical). You will find below a list of the minimal tool set required to perform troubleshooting procedures throughout this manual. Brand names are only suggested.

Figure 8-1 Digital multimeter or VOM (Volt-Ohm-Milliammeter)



NOTE: The ammeter must support at least 10 amps.

Figure 8-2 Jumper wire with alligator clips

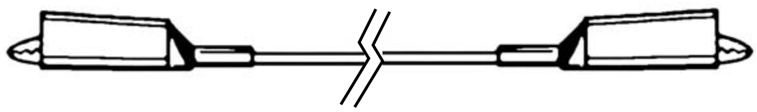


Figure 8-3 Two oil pressure gauges (0–4000 psi)

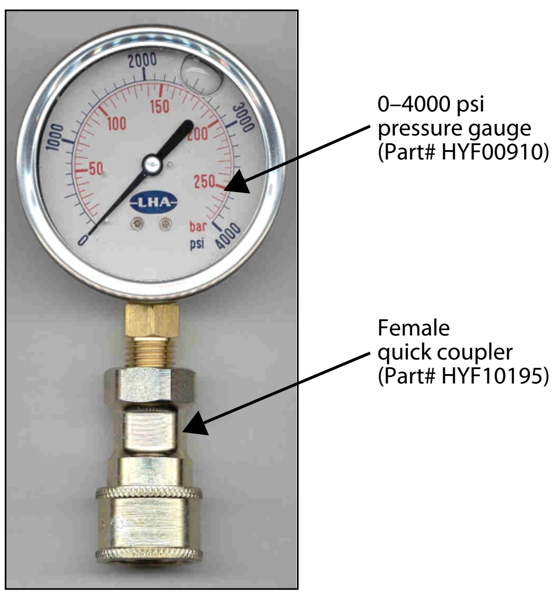


Figure 8-4 Ball-end hex wrench (metric and SAE)



Troubleshooting Guide

This troubleshooting guide will help identify the most commonly seen problems on the AUTOMIZER™. The table below will also provide the possible cause of the problem and give solutions to resolve that problem.

For further information regarding customized options that might not be found in this troubleshooting guide, contact Labrie*Plus*.

Problem	Possible causes	Solution
Insufficient packing ratio	Low oil pressure	See *Adjusting Pressure and Relief Valves* on page 139.
	Packer hydraulic cylinders internally bypassing	See *Detecting Cylinder Internal Leaks* on page 157.
	Defective pump	Replace the pump.
Overheating hydraulic oil (temperature above 77°C [180°F])	Low oil level in the hydraulic tank	Add oil to the required level. See *Replacing Hydraulic Oil* on page 156.
	Hydraulic pressure too low or too high	See *Adjusting Pressure and Relief Valves* on page 139.
	Not the proper grade of oil (that is too thin in hot temperatures or too thick in cold temperatures)	Change for oil indicated in *Recommended Lubricants* on page 99 (see *Emptying the Hydraulic Tank* on page 152).
	Contaminated oil	Clean the strainer and change the return filter element. Fill with clean oil. See *Cleaning the Strainer* on page 153, *Replacing Filter Elements* on page 154, and *Replacing Hydraulic Oil* on page 156.
	Restriction in the system	Check all hydraulic components for debris that could cause restriction in the system. Have the pump inspected by a specialist.
Foaming oil	Low oil level	Add oil to the required level. See *Replacing Hydraulic Oil* on page 156.
	Air entering the system	Tighten all hose and pipe connections between the pump and the hydraulic tank.

Problem	Possible causes	Solution
	Not the proper grade of oil	Empty oil and refill with anti-foaming oil. See *Recommended Lubricants* on page 99 and *Emptying the Hydraulic Tank* on page 152.
Cavitation, excessive noise or vibration of the pump.	Ball valve on hydraulic tank	Fully open the ball valve on the hydraulic tank. See *Prior to Start Up* on page 13.
	Low oil level	Add oil to the required level. See *Replacing Hydraulic Oil* on page 156.
	Oil too thick	See *Recommended Lubricants* on page 99 for proper type of oil to use. See also *Emptying the Hydraulic Tank* on page 152.
	Air in the system	See *Pump Cavitation* on page 178.
	Particle contamination or dirty strainer	Clean the strainer and change the return filter. Fill with clean oil. See *Cleaning the Strainer* on page 153, *Replacing Filter Elements* on page 154, and *Replacing Hydraulic Oil* on page 156. Take an oil sample for further analysis (see *Testing Hydraulic Oil* on page 100).
	Blocked suction hose	Unblock or replace the hose.
The pump (PTO) does not engage	Red emergency STOP button(s)	Ensure that the red button on packer control station is pulled out.
	Engine speed higher than 900 rpm	Reduce engine speed below 900 rpm. If the speed cannot be reduced under 900 rpm, contact your local chassis dealer.
	Electrical failure	Check fuses inside the control panel and the main fuses near the battery. See *Pump* on page 178.
	Faulty electric dump valve	Replace the electric dump valve.
No hydraulic pressure	Pump not engaged	Turn on the PTO switch.
	Low oil pressure	See *Adjusting Pressure and Relief Valves* on page 139.

Problem	Possible causes	Solution
	Faulty hydraulic line	Perform a circuit analysis using the main hydraulic schematics (see *Main Hydraulic Schematic (1)* on page 185).
	Stuck hydraulic spool inside valve	Make sure that no spool inside the directional valve is stuck in a position that could send the hydraulic flow to the tank.
	Faulty electric dump valve	Replace the electric dump valve.
Pump is leaking oil	Loose connections	Tighten all connections to the pump.
	Damaged pump shaft seal	Have the pump repaired by an authorized service center.
Packer is moving vertically or sideways	Worn down packer wear pads	Inspect or replace wear pads as indicated in *Upper Wear Pads* on page 56 and *Lower Wear Pad* on page 60.
	Worn down sliding shoes	Inspect or replace sliding shoes as indicated in *Sliding Shoes* on page 48.
Tailgate is unlocking or lowering by itself	Dirty or defective velocity fuse	Clean or replace the velocity fuse. See *Tailgate-Locking Mechanism* on page 181.
	Inverted hydraulic hoses on main hydraulic valve	Test the power bleed on the tailgate section of the valve. See *Tailgate-Locking Mechanism* on page 181.
Packer does not complete a full cycle	Full body	Empty the body as explained in the AUTOMIZER™ Operator's Manual.
	Garbage behind the packer	Clean behind the packer (see *Cleaning up the Hopper (Standard Units)* on page 25).
	Packer proximity switch adjustment, or presence of debris	Clean the area around the proximity switches (see *Proximity and Limit Switches* on page 77).
	Defective air control systems	See *Pneumatic System* on page 163.
Packer does not start at all when pressing the green button	PTO switch	Make sure that the PTO switch is turned on.

Problem	Possible causes	Solution
	Emergency STOP buttons (red)	Make sure all emergency stop buttons are pulled out.
	Hydraulics	See *Adjusting Pressure and Relief Valves* on page 139.
	Faulty harness between packer module and control station	
	Defective packer module	
	Hopper door open	Close the hopper door.
Packer does not perform enough cycles	Multi-cycle module programming	Reprogram the module for higher number of cycles (see *Main Menu* on page 195).
Backup alarm and warning buzzer inside the cab work all the time	Tailgate proximity switch adjustment	Adjust the proximity switch with the tailgate cylinder (see *Adjusting Tailgate Unlocked Proximity Switch* on page 85).
	Body-raised limit switch adjustment	Adjust the limit switch rod with the body floor (see *Adjusting Body-Raised Limit Switch* on page 84).
	Proximity switch	Check the proximity switch with a multimeter or VOM for proper operation (ON/OFF or click).
	Faulty harness	Check for continuity on the electrical harness that is connected to the proximity switch. Change the electrical harness if necessary.
Arm is too fast/too slow	Flow limiter adjustment on proportional valve	Recalibrate cylinder speed (see *Adjusting Arm Speed* on page 226).
Flashing lights on dashboard are always blinking	Arm limit switch adjustment	Align the lever with the gripper finger (see *Adjusting Arm Stowed Limit Switches (2)* on page 90).
	Cut off or defective power cables	Perform a continuity test on the cable or change faulty cables.
	Faulty limit switch(es)	Replace faulty limit switch(es).
Arm does not respond to joystick (assuming that the pump switch is ON)	Cut off or defective power cables	Follow wires on the electrical schematic for 12-volt supply (move joystick to get signal).
	Faulty joystick	Contact Labrie*Plus*.

Pump

The pump is operated by a control switch located on the control panel. When it is engaged, the switch turns green.

Three conditions must be met for the pump to engage and the switch to turn green:

- Air pressure must be at approximately 70 psi
- Engine speed must be lower than 900 rpm
- Emergency STOP button (red) must be pulled out

Air pressure condition is verified by a pressure switch, and engine speed, by the transmission ECU.

If the pump does not engage when the pump switch is turned on, it may be related to a voltage supply problem in the pump circuitry.

The following test will help resolve pump-related problems. Prior to the test, ensure that all these conditions are met:

- Parking brake applied
- Engine is running (idle speed)
- Transmission in “Neutral”
- Emergency STOP button(s) pulled out
- Pump (PTO) switch ON

NOTE: Neither the engine throttle nor the transmission not being in Neutral will affect pump operation once the pump is engaged.

Pump Cavitation

Cavitation is defined as the formation of air pockets in a moving fluid. Air in the hydraulic oil causes excessive wear and noise. Make sure to prime the pump properly before installing it or after flushing the hydraulic system (refer to “Priming a New Pump” on page 136). When the pump is properly primed, cavitation disappears after a short time because air is returning to the hydraulic tank.

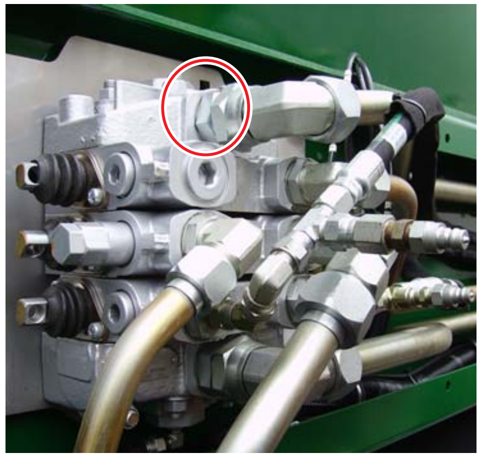
If the pump is still generating unusual noise after performing the priming procedure, you will have to bleed the hydraulic system.

To do so:

1. Apply all safety measures to ensure safety around the vehicle at all times.
2. Connect a 0–4000 psi gauge to the main valve to ensure that no pressure has built up in the system.
3. Apply the parking brake and start the engine.
4. Engage the hydraulic pump (pump/PTO switch “ON”).
5. Place a pan or a bucket under the plug located on the main control valve output section and slowly loosen the plug.

   A mixture of oil and air will come out. Keep bleeding the oil until the pump noise stops.

Figure 8-5 Plug to loosen



IMPORTANT: Do not activate any hydraulic function during system bleeding.

6. When the noise stops, tighten the pipe/hose fitting.
7. Cycle the packer to ensure that there are no leaks and the pump is running smoothly.
8. Disconnect the gauge.

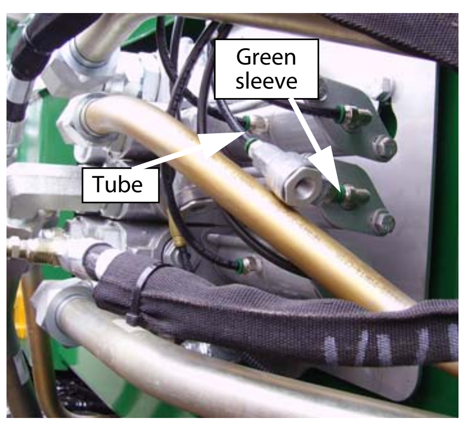
Packer Air System

If the packer does not complete a full cycle, the problem may be related to the air system.

To fix the problem:

1. Apply all safety measures to ensure safety around the vehicle at all times.
2. Remove the optional cover (if applicable) over the valve to get access to the air tubes.
3. Remove the air tube from the actuator by pushing on the green sleeve with a screwdriver and pulling the tube.

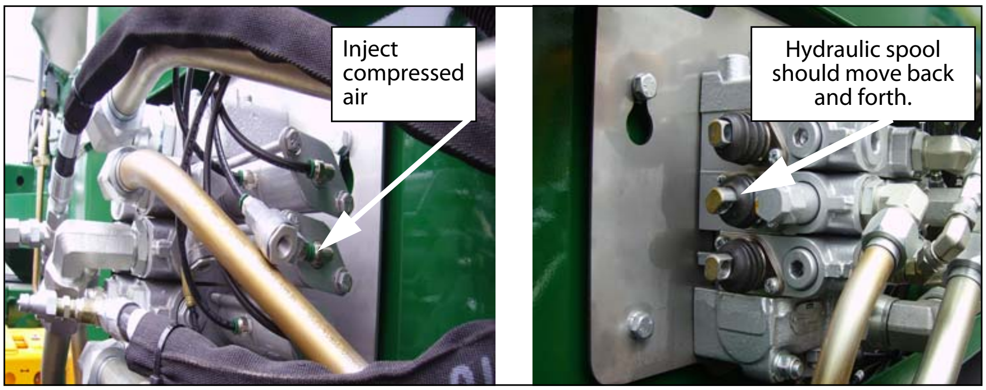
Figure 8-6 Removing the air tube from the actuator



4. Inject compressed air on one side of the actuator to ensure that the spool moves freely inside the valve (the same process will have to be done for the other side of the actuator).

- If the spool is not moving freely, lubricate or replace the air actuator.
- If the spool is moving freely, try injecting air in the tube and see if air is exiting from the quick exhausts valves, close to the packer valve section actuator.
- If not, check that air lines are not blocked or bent, and, if necessary, replace the quick exhaust valves.

Figure 8-7 Injecting compressed air



IMPORTANT: If air is leaking by the opposite port of the pressurized side of the actuator when both hoses are removed, this could indicate that the o-ring on the air actuator piston is leaking. If needed disassemble, clean, and lubricate with grease, or replace the o-ring.

Tailgate-Locking Mechanism

NOTE: Refer to "Main Hydraulic Schematic (1)" on page 185 and *Main Hydraulic Schematic (2)* on page 186.

The tailgate-locking mechanism is equipped with hydraulic safety components that prevent accidental unlocking of the tailgate during operation. One of the safety components is the velocity fuse with a *power bleed* feature, the other is the holding valve.

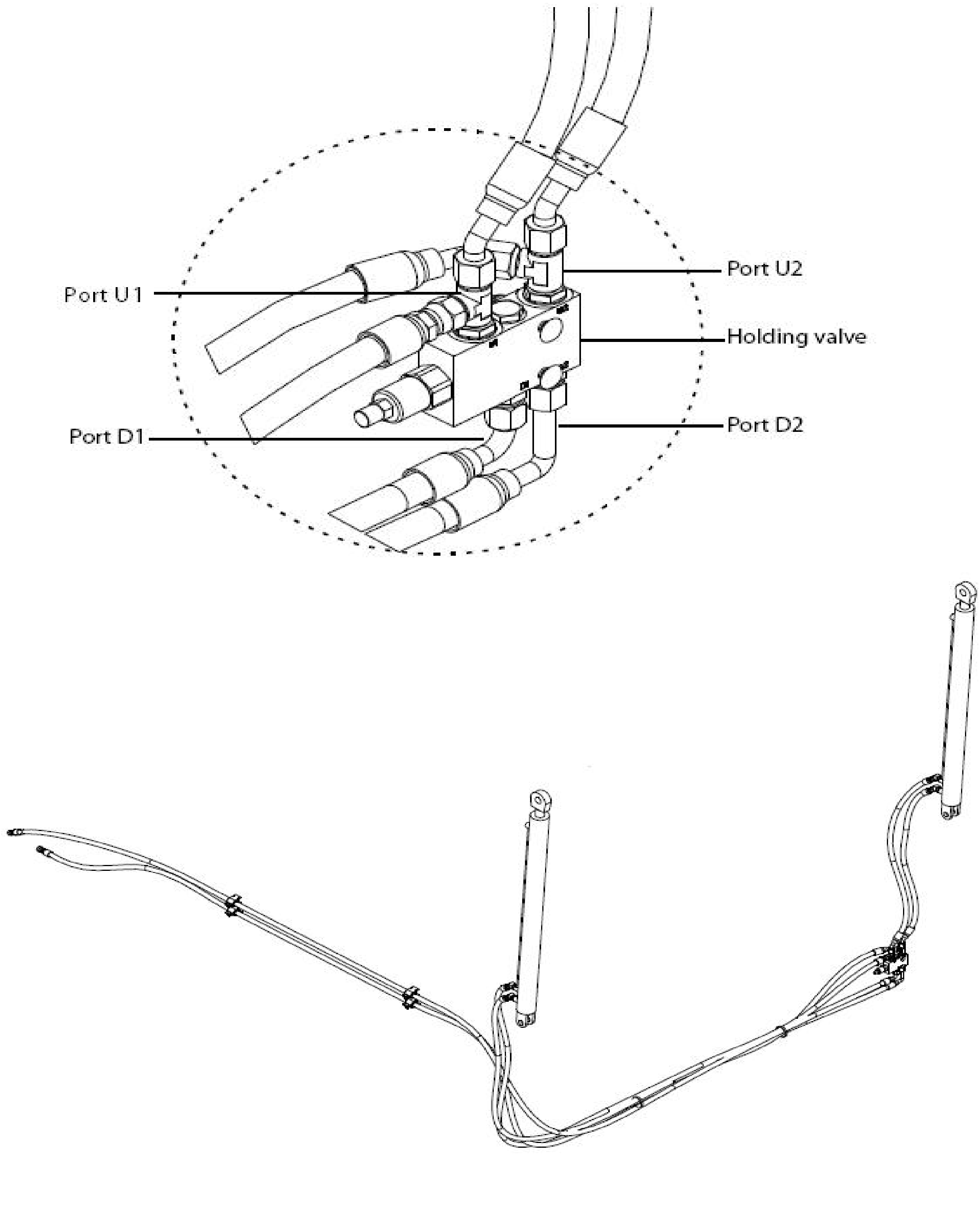
The spool inside the tailgate section of the valve is designed in such a way as to allow pressure to pass through it every time pressure is building up in the hydraulic system (that is when the packer is working). The pressure "burst" goes to the holding valve into port D1 and then out to the cylinder by port U1 (see Figure 8-9). This will keep the tailgate cylinders pressurized and the tailgate closed when packing refuse.

The velocity fuse, located on the right-hand side of the valve, will make sure to drain any slow moving oil coming from the piston side of the tailgate cylinders. Since the rod side is being pressurized with the "power bleed" system, the other side has to drain to avoid any pressure build-up. The velocity fuse makes the piston side open to tank when the oil is moving under 3 gallons per minute, and will shut close when a flow signal is sent.

Figure 8-8 Velocity fuse



Figure 8-9 Tailgate-locking mechanism



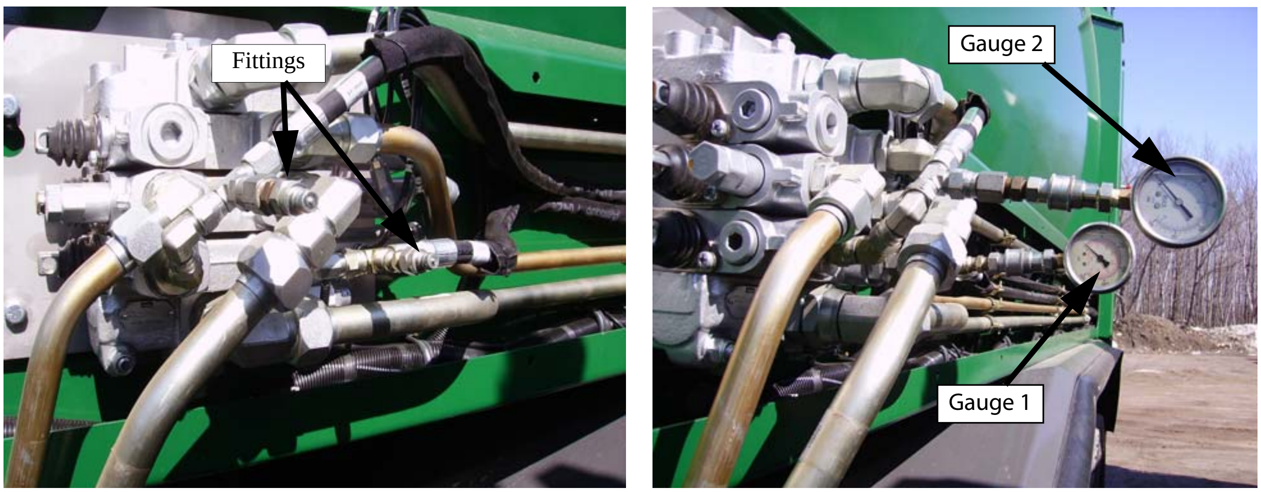
Tailgate Unlocking Spontaneously

If the tailgate seems to unlock by itself when using the packer, the "power bleed" inside the valve might not be working on the right side of the hydraulic cylinder.

To fix this problem:

1. Apply all safety measures to ensure safety around the vehicle at all times.
2. Ensure that the parking brake is applied.
3. Pull out the red emergency STOP button.
4. Install a pressure gauge on each port of the tailgate section (on the valve).

Figure 8-10 Gauges 1 and 2



5. Start the engine and engage the hydraulic pump.
6. Disconnect the packer extend proximity switch.

   This will prevent the packer from returning to its initial position.
7. Push the green "start cycle" button to start the packer and pressurize the system.

   Gauge 1 should always indicate 0 psi and gauge 2 should indicate a sudden burst of pressure (from 0 psi to 3000 psi) each time the packer reaches the end of a stroke. If gauge 1 indicates pressure, this may be caused by a faulty holding valve, faulty velocity fuse or hydraulic hoses not properly connected. Refer to the main hydraulic schematic for proper connection (see *Main Hydraulic Schematic (1)* on page 185 or *Main Hydraulic Schematic (2)* on page 186).

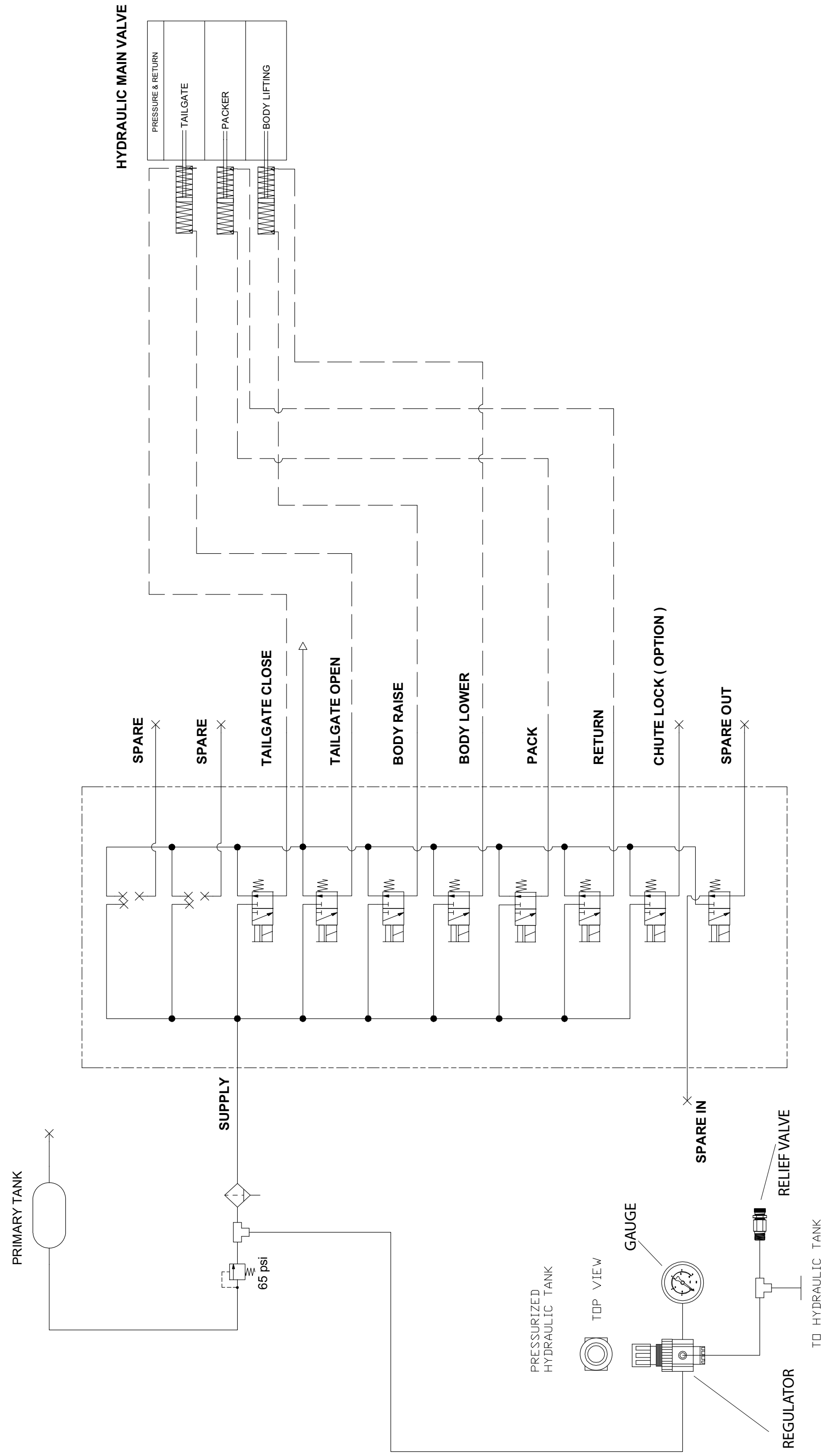
Tailgate Lowering Spontaneously

If the tailgate seems to lower by itself, a faulty velocity fuse might be involved.

To fix the problem:

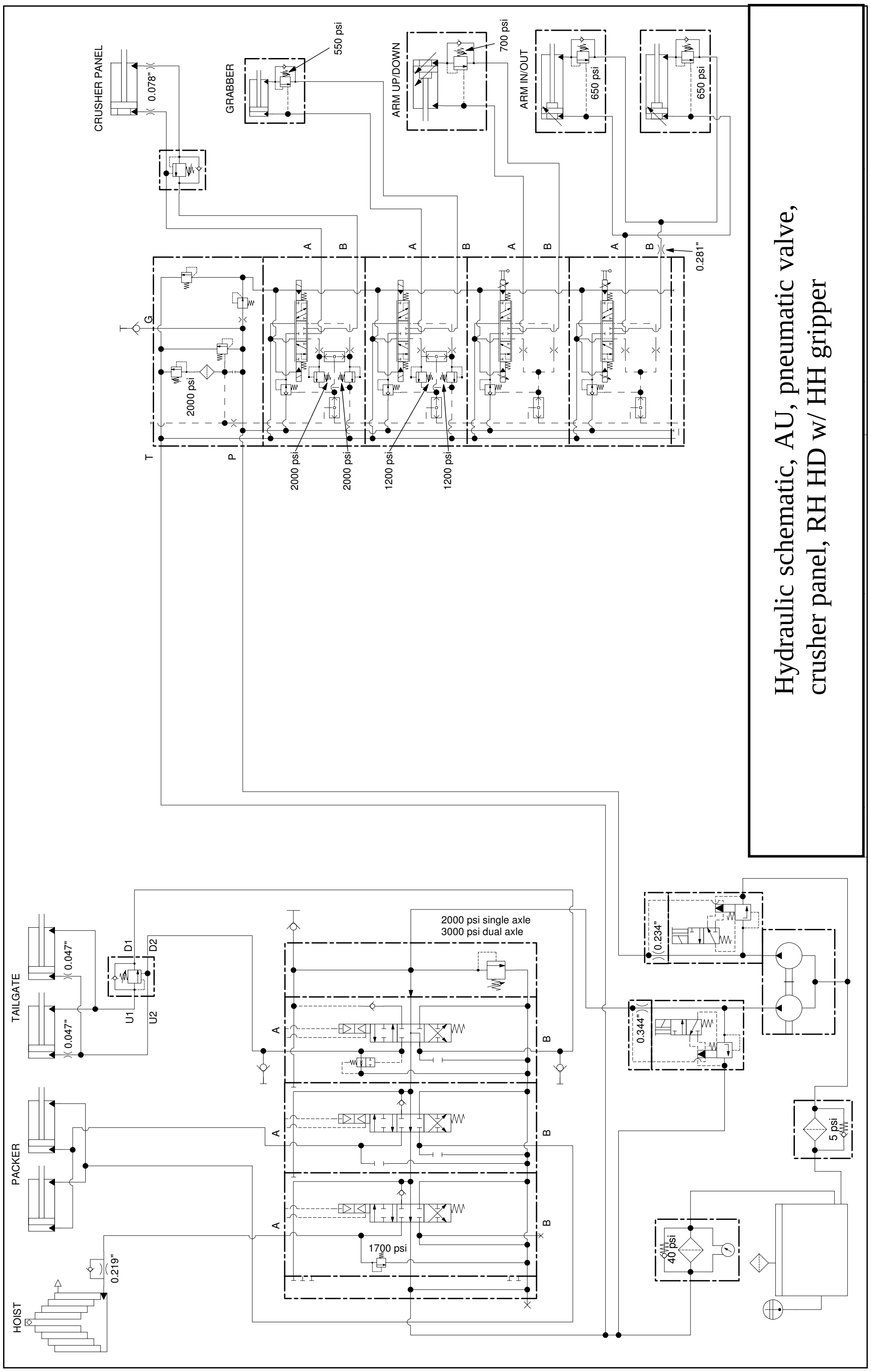
1. Apply all safety measures to ensure safety around the vehicle at all times.
2. Ensure that the parking brake is applied.
3. Make sure that the velocity fuse is clean and that its plunger is moving freely. Replace if necessary.

Pneumatic System Schematic[1]



1. **For reference only. The pneumatic schematic specific to your truck, based on the body serial number, is found in the truck's cab.**

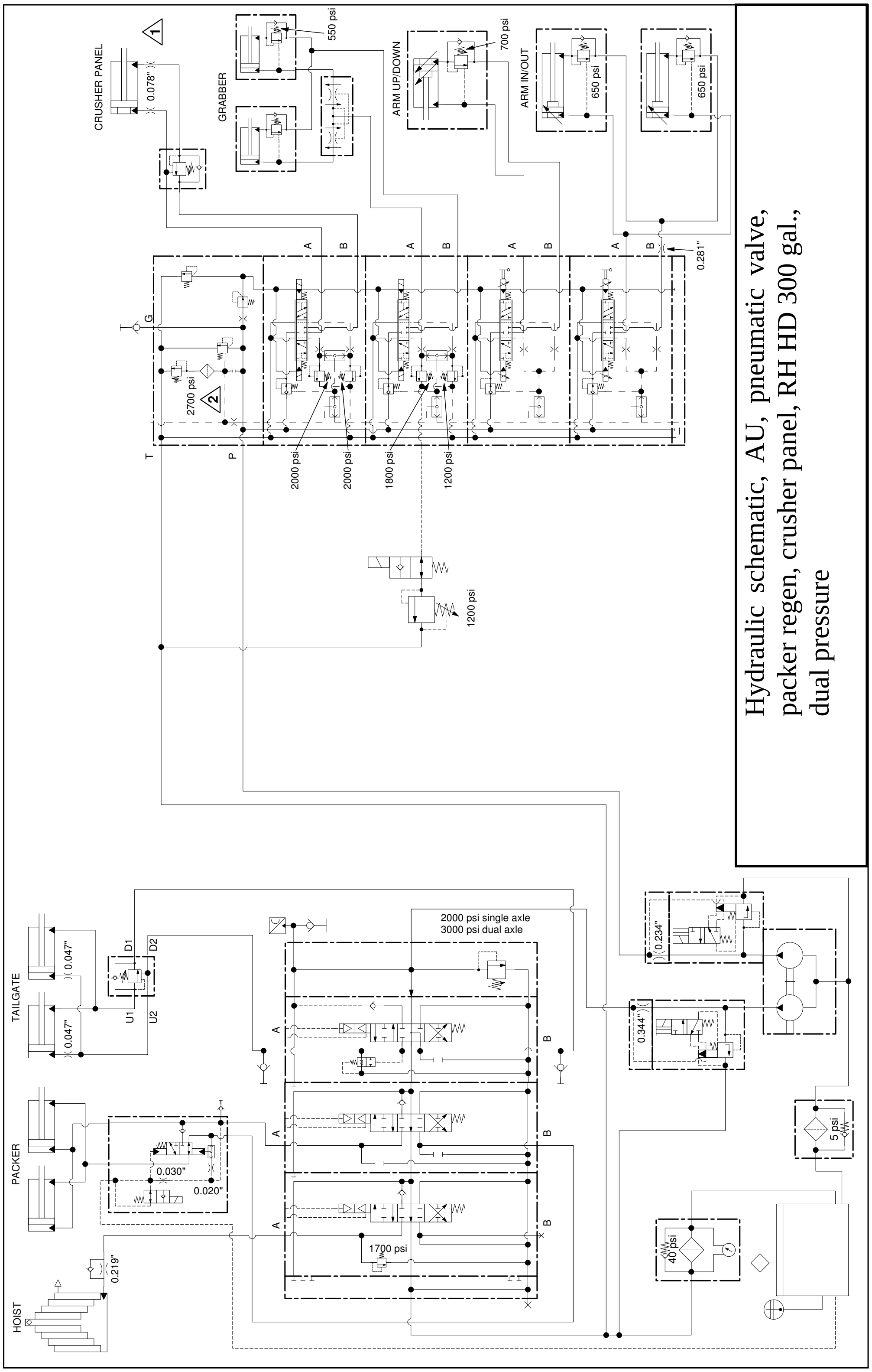
Main Hydraulic Schematic (1)[1]



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1. For reference only. The hydraulic schematic specific to your truck, based on the body serial number, is found in the truck's cab.

Main Hydraulic Schematic (2)[1]



1. For reference only. The hydraulic schematic specific to your truck, based on the body serial number, is found in the truck's cab.

9

Multiplexing

As Labrie Enviroquip Group vehicles become more and more efficient, they require more automation features and thus some programming. Currently, AUTOMIZER™ vehicles require programming of:

- Labrie's CAN bus-based multiplexed system
- the Allison transmission parameters, and
- the Cummins engine parameters

The following pages provide the necessary information for these tasks.

Labrie's Multiplex System

Labrie has equipped your AUTOMIZER™ unit with a CAN bus-based multiplexed system, which integrates a monitor, a control panel, a joystick, and a set of electronic controllers. This whole system has been designed to help you operate your unit in an efficient and easy way. Labrie's multiplexed system is reliable and safe and it requires less wiring harnesses to operate. It can also monitor various function status of the body and display warning and caution messages.

Through its monitor (see Figure 9-1), Labrie's multiplexed system informs you of any malfunctions that may occur during the operation of the truck. Various caution and warning messages can be displayed on the monitor, depending on the seriousness of the situation. Yellow-highlighted messages indicate that caution should be used while red-highlighted messages indicate a warning situation that must be dealt with quickly.

Figure 9-1 Monitor



Each time the operator turns the ignition key on, a complete bit test of the multiplex system is conducted. This test takes about 5 seconds to complete.

NOTE: A flashing green light on the monitor indicates that the display power is on. This light should be blinking steadily at 2 Hz during normal operation. If it blinks at a faster rate, it is a sign of a problem with the monitor. A flashing red light on the monitor is also a sign of a problem. Call Labrie*Plus* for support.

The logo of Labrie Enviroquip Group appears momentarily on the monitor display at the start of the system (see Figure 9-2).

Figure 9-2 Labrie logo on the monitor display



NOTE: If the Welcome Screen with the Labrie logo stays on continually, there may be a communication problem between the monitor and the master control module. Refer this problem to the maintenance personnel.

NOTE: The monitor display works even if the engine is not started. All it needs is electrical power. However, if you start the engine, the monitor will reboot to reflect the changes caused by the starting of the truck.

Main Page

The next page that comes up after the Welcome Screen is the Main Page (see Figure 9-3). Here you will find a link that will give you access to the Main Menu (see *Main Menu* on page 195). Any warning or error messages that may occur while the truck is being operated are also displayed on this page. The following optional indicators, when provided, are also found on the Main Page : Cart Counter, Time and Date Indicator and Hydraulic Oil Temperature Indicator.

Cart Counter (optional)
This indicator tells you how many carts have been emptied so far. If your vehicle is equipped with two arms, the number of carts emptied is shown for each of these arms (right and left counters).

Figure 9-3 Main page



Press the far right button to reset the counter display to zero.

Time and Date Indicator (optional)

A time and date indicator may be found on the upper left-hand side corner of the screen. The availability of this indicator is based on the chassis on which the body is mounted. If the chassis provides real-time clock information through J1939 bus, time and date will appear on the screen. To set the Time and Date indicator, go to the Main Menu and choose Time Adjust.

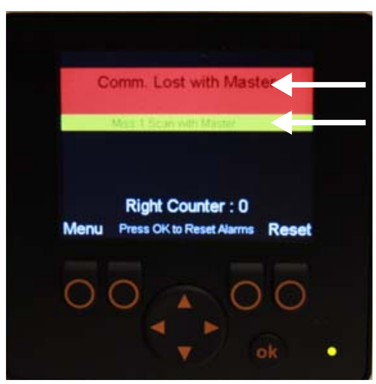
Hydraulic Oil Temperature Indicator (optional)

This optional indicator, when provided, shows you the current hydraulic oil temperature. This indicator is found on the upper right-hand side corner of the screen.

Warning and Caution Messages

On the monitor screen, yellow-highlighted messages indicate that caution should be used and red-highlighted messages indicate a warning situation that must be dealt with quickly.

Figure 9-4 Warning and caution messages on monitor



See Table 1 for a list of warning and caution messages. Please note that this list is not exhaustive.

Table 1 **Warning messages**

Warning and Caution Messages	Solution
Arm Up:Chute Bad Pos.	Place Chute in Correct Position
Arm Up:Crusher Not Raised	Raise Crusher Panel
Arm:Auxiliary Deadman ON	Release Auxiliary Deadman
Arm:Body Raised	Lower Body
Arm:Hopper Door Not Close	Close Hopper Door
Arm:Pump Not Started	Engage Pump
Arm:Tailgate Unlocked	Lock Tailgate
AutoDump:Cab EStop	Pull Out Cab EStop Button
AutoDump:Pump Not Started	Engage Pump
Body:Pump Not Started	Engage Pump
Buzzer:Arm Not Stow	Retract Arm to Stowed Position
Buzzer:Body Raised	Lower Body
Buzzer:TailGate Unlocked	Lock Tailgate
Chute:Arm Too High	Lower Arm
Chute:Crusher Not Up	Raise Crusher
Chute:Pump Not Started	Engage Pump
Crusher:Arm Too High	Lower Arm
Crusher:Chute Bad Pos.	Move Chute to Correct Position
Crusher:Hopper Door Not Closed	Close Hopper Door
Crusher:Packer Not Retracted	Retract Packer
Crusher:Pump Not Started	Engage Pump
ESTOP:Aux. Cab EStop	Pull Out Aux. Cab EStop Button
ESTOP:Cab Emergency Stop	Pull Out Cab EStop Button
FullEject:Cab EStop	Pull Out Cab EStop Button
FullEject:Packer Not Retracted	Retract Packer
FullEject:Pump Not Started	Engage Pump

Table 1 **Warning messages (cont'd)**

Warning and Caution Messages	Solution
Gripper Open:Arm Too High	Lower Arm
High Hydraulic Oil Temp.	Turn Off Engine and Refer to your Maintenance Personnel
Low Hydraulic Oil	Add Hydraulic Oil
Packer Extend:Air Weigh Signal	Unload Body
Packer:Already Extended	Refer to Maintenance Personnel or Labrie*Plus*
Packer:Already Retracted	Refer to Maintenance Personnel or Labrie*Plus*
Packer:Extend Too Long	Check Extend Prox
Packer:Pump Not Started	Engage Pump
Packer:Retract Too Long	Check Retract Prox
Pump Not Started:Aux. Cab EStop	Pull Out Aux. Cab EStop Button
Pump Not Started:Cab EStop	Pull Out Cab EStop Button
Pump Not Started:Hopper Door Open	Close Hopper Door
Pump Not Started:Main Air Pressure	Let the Air Build Up to Required Pressure
Pump Not Started:RPM Too High	Lower Engine Speed Below 900 RPM
Pump Stop:Main Air Pressure	Let Air Build Up to Req'd Pressure
Pump:Aux. AutoDump Switch ON	Release Aux. AutoDump Switch prior to Engaging Pump
Pump:Aux. ChuteToLeft Switch ON	Release Aux. ChuteToLeft Switch prior to Engaging Pump
Pump:Aux. ChuteToRight Switch ON	Release Aux. ChuteToRight Switch prior to Engaging Pump
Pump:Aux. CloseGripper Switch ON	Release Aux. CloseGripper Switch prior to Engaging Pump
Pump:Aux. Deadman Switch ON	Release Aux. Deadman Switch prior to Engaging Pump
Pump:Aux. OpenGripper Switch ON	Release Aux. OpenGripper Switch prior to Engaging Pump

Table 1 Warning messages (cont'd)

Warning and Caution Messages	Solution
Pump:BodyLower Switch ON	Release BodyLower Switch prior to Engaging Pump
Pump:BodyRaise Switch ON	Release BodyRaiseSwitch prior to Engaging Pump
Pump:CrusherDown Switch ON	Release CrusherDown Switch prior to Engaging Pump
Pump:CrusherUp Switch ON	Release CrusherUp Switch prior to Engaging Pump
Pump:Hopper Door Not Close	Close Open Door
Pump:J1 AutoDump Switch ON	Release J1 AutoDump Switch prior to Engaging Pump
Pump:J1 ChuteToLeft Switch ON	Release J1 ChuteToLeft Switch prior to Engaging Pump
Pump:J1 ChuteToRight Switch ON	Release J1 ChuteToRight Switch prior to Engaging Pump
Pump:J1 CloseGripper Switch ON	Release J1 CloseGripper Switch prior to Engaging Pump
Pump:J1 Deadman Switch ON	Release J1 Deadman Switch prior to Engaging Pump
Pump:J1 OpenGripper Switch ON	Release J1 OpenGripper Switch prior to Engaging Pump
Pump:J2 AutoDump Switch ON	Release J2 AutoDump Switch prior to Engaging Pump
Pump:J2 ChuteToLeft Switch ON	Release J2 ChuteToLeft Switch prior to Engaging Pump
Pump:J2 ChuteToRight Switch ON	Release J2 ChuteToRight Switch prior to Engaging Pump
Pump:J2 CloseGripper Switch ON	Release J2 CloseGripper Switch prior to Engaging Pump
Pump:J2 Deadman Switch ON	Release J2 Deadman Switch prior to Engaging Pump
Pump:J2 OpenGripper Switch ON	Release J2 OpenGripper Switch prior to Engaging Pump

Table 1 Warning messages (cont'd)

Warning and Caution Messages	Solution
Pump:Packer Extend Switch ON	Release Packer Extend Switch prior to Engaging Pump
Pump:Packer Retract Switch ON	Release Packer Retract Switch prior to Engaging Pump
Pump:PTO Not OK	Refer to Maintenance Personnel or Labrie*Plus*
Pump:RPM Too High	Lower Engine Speed Below 900 RPM
Pump:TailgateDown Switch ON	Release TailgateDown Switch prior to Engaging Pump
Pump:TailgateUp Switch ON	Release TailgateUp Switch prior to Engaging Pump
Pump:Trans. Not OK	Refer to Maintenance Personnel or Labrie*Plus*
Raise Body:Air Susp. Not Down	Lower Air Suspension
Raise Body:Arm Not Stow	Retract Arm to Stowed Position
Raise Body:Tag Not Down	Lower Tag
Raise Body:Tailgate Not Open	Open Tailgate
Raise Body:Truck Moving	Bring Truck to a Standstill
Service Oil Filter #1	Replace Oil Filter #1
Service Oil Filter #2	Replace Oil Filter #2
Tag:Move Tag switch to Tag Up	Raise Tag
Tailgate Up:Truck Moving	Bring Truck to a Standstill
Tailgate:Pump Not Started	Engage Pump
Wrong Driver Position	Change Driver Position Switch to Correct Position

Table 2 Error messages

Error Messages	Solution
Button Pack 12 is disconnected	Refer to Maintenance Personnel or Labrie*Plus*
Button Pack 13 is disconnected	Refer to Maintenance Personnel or Labrie*Plus*
Button Pack 14 is disconnected	Refer to Maintenance Personnel or Labrie*Plus*
Button Pack 15 is disconnected	Refer to Maintenance Personnel or Labrie*Plus*
CAN Error Level 1	Refer to Labrie*Plus*
CAN Error Level 2	Refer to Labrie*Plus*
CAN Error Level 3	Refer to Labrie*Plus*
Comm. Lost with Master	Refer to Maintenance Personnel or Labrie*Plus*
Module 11 is disconnected	Refer to Maintenance Personnel or Labrie*Plus*
Module 11 not Connected	Refer to Maintenance Personnel or Labrie*Plus*
Module 20 is disconnected	Refer to Maintenance Personnel or Labrie*Plus*
Module 20 not Connected	Refer to Maintenance Personnel or Labrie*Plus*
Module 30 is disconnected	Refer to Maintenance Personnel or Labrie*Plus*
Module 30 not Connected	Refer to Maintenance Personnel or Labrie*Plus*
Module 50 is disconnected	Refer to Maintenance Personnel or Labrie*Plus*

Table 2 Error messages (cont'd)

Error Messages	Solution
Module 50 not Connected	Refer to Maintenance Personnel or Labrie*Plus*
Module 60 is disconnected	Refer to Maintenance Personnel or Labrie*Plus*
Module 60 not Connected	Refer to Maintenance Personnel or Labrie*Plus*

Should the system issue a warning or caution message, it will appear on the Main Page.

For example, if the following caution message "Pump Not Started: Main Air Pressure" is issued by the system, it will appear on the Main Page of the monitor. An action that could be taken by the operator, when faced with such a situation, would be to wait until the required main air pressure level is reached.

For a specific problem or condition that requires special attention, the multiplexed system can alert the operator to a possible cause, which appears in bold and large print on the monitor screen (active cause). The operator should check if the problem stems from the highlighted or active cause. One possible cause is highlighted at a time. What is shown in light and small print in the lower part of the screen are causes that have already been dealt with (non active causes) [see Figure 9-5].

Figure 9-5 Example of a possible cause



NOTE: If the system detects a problem, a beep will sound and a message will appear on the monitor screen.

NOTE: To go back to the Main Page or Main Menu, press "Esc" as needed until the desired page is displayed.

Main Menu

To access the Main Menu, press the far left button when the Main Page is displayed.

When the Main Menu is displayed, you can have access to the following sections:

- Multicycle
- I/O Status
- Program Version
- Pump Usage (optional)
- Time Adjust (available according to chassis)

Displayed in the lower center of the screen is an indicator that monitors traffic on the network. This indicator is called Network Load, and it shows values that reflect such traffic.

NOTE: The higher the network load value is, the heavier the traffic is on the network.

To exit this page and return to the Main Page, press “Esc”. To choose a section from the Main Menu, highlight the desired section using the up/down arrows and press the “OK” button.

Multicycle

The monitor display of Labrie’s multiplex system is user-friendly. Say you want to change the multicycle settings of the packer. All you have to do is select MENU from the Main Page by pressing the corresponding button at the bottom left corner of the monitor display. From the displayed menu, choose the option SELECT THE NUMBER OF CYCLES. If need be, use the arrow to choose that option and press “OK”. The multicycle settings can be changed from 2 to 8 cycles. Choose the desired number of cycles and press “OK”. It could not be easier!

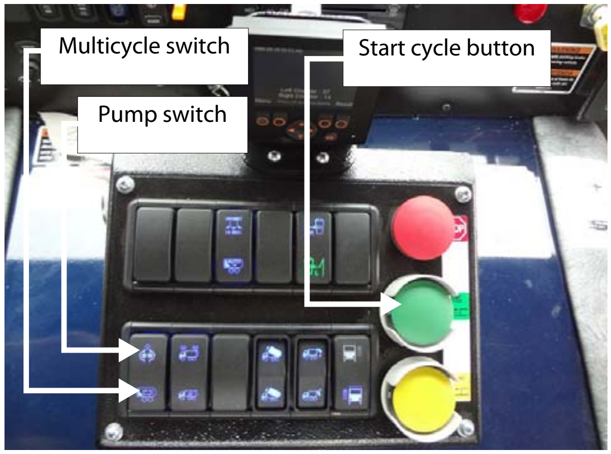
Figure 9-6 Multicycle page



NOTE: The packer multicycle function has been preset at the factory to carry out 3 cycles after every cart dumped.

When the MULTICYCLE switch on the control panel is on and the packer is activated, the packer will move according to the default number of cycles (that is 3) or to the number of cycles you chose (up to 8 cycles).

Figure 9-7 Control panel



To test the new settings:

1. On the control panel press the MULTICYCLE switch and the green START CYCLE button (Figure 9-7).
2. Once the packer has completed its cycles and come to a stop, switch off the hydraulic pump and turn off the engine.

The number of cycles needs to be adjusted depending on the type of collection route used by the vehicle. For example, in a residential area, if the houses are numerous and close one to another, it may be required to increase the number of cycles. This will allow the hopper to be clear for the next house pickup.

Each time the packer completes a full cycle, the proximity switch located on the right-hand side, behind the packer, sends a signal to the electronic controller. The controller then counts the amount of cycles that the packer does, and will stop the packer after the preset amount of cycles has been reached.

I/O Status

In this section, you will find helpful information to troubleshoot body-related problems that you may face during your day-to-day tasks. These problems can be of any nature, from hydraulic to mechanical, electrical or pneumatic.

Select the control module corresponding to the part of the truck that needs to be checked.

For example, if you want to check all functions that are found in the cab, choose module #10. For all functions that pertain to the chassis, choose module #20, etc.

To choose a particular module, use the up/down arrows to select it and press “OK”.

NOTE: Entering “OK” can be done two ways: press either the far right button or the “OK” button.

Press “Esc” to return to the preceding page.

Figure 9-8 Module I/O Status page



Input Status

The Input Status page is accessible from the Module I/O Status page. After selecting the desired module and pressing "OK", the Input Status page of the selected module is displayed (see Figure 9-9).

Figure 9-9 Input Status page



The Input Status page contains a set of rectangles. Each of these rectangles represents input elements, which in turn correspond to a particular function of the truck. For example, if you select rectangle I00, a short description appears in the lower part of the screen, which indicates that this rectangle relates to the input element coming from the service brake pressure switch.

NOTE: Each rectangle is numbered and relates to a specified function of the truck. However, for a given number, the related function may vary from truck to truck.

Table 3 Colored rectangles

Rectangles (inputs)	Function Status
Blue	Inactive
Green	Active

Press “Esc” to return to the preceding page.

Press the “Output” button to display the Output Status page.

Output Status

The Output Status page is accessible from the Input Status page (see Figure 9-10).

Figure 9-10 Output Status page



The rectangles on this page are used to check the status of different outputs.

NOTE: Each rectangle is numbered and relates to a specific function of the truck. However, for a given number, the related function may vary from truck to truck.

Table 4 Colored rectangles

Rectangles (outputs)	Function Status
Blue	Inactive
Green	Active
Red	Closed short-circuit
Yellow	Open circuit

Press “Esc” to return to the preceding page.

Press the “Force” button to display the Force page.

NOTE: To go back to the Main Page or the Main Menu, press “Esc” as many times as necessary until the desired page is displayed.

Force

The Force page is accessible from the Output Status page. Just press the corresponding button to access the Force page.

But before the Force page is displayed, a warning message appears on the monitor screen (see Figure 9-11).

Figure 9-11 Warning message



This message stays on for 15 seconds. Then an “OK” prompt appears on the lower right-end corner of the screen.

IMPORTANT: It is very important to read this message entirely before accessing the next page.

Figure 9-12 Warning message w/ “OK” prompt



Press “OK” to go to the Force page or “Esc” to return to the preceding page.

After pressing “OK”, the Force page appears on the screen.

Figure 9-13 Force page (input)



As no input function can be forced to be active or inactive, the operator must press the "Output" button to go to the following page (see Figure 9-14).

Figure 9-14 Force page (output)



The Force page allows the operator to force a function to be overridden. This is useful to enable an inactive function or to disable an active function.

This page contains a set of rectangles. Each of these rectangles is numbered and relates to a specific function of the truck.

Colors are used to indicate whether the corresponding function is active or not:

- a blue rectangle means the corresponding function is inactive
- a green rectangle means the corresponding function is active

Also:

- a red rectangle means there is a closed short-circuit
- a yellow rectangle means there is an open circuit

A white-bordered rectangle means that this rectangle is selected. Use the directional arrows to select a specific rectangle or function. When a rectangle is selected, a short description of the corresponding function appears in the lower part of the screen.

After selecting a rectangle:

- press "ON" to activate the corresponding function (rectangle turns from blue to green)
- press "OFF" to deactivate the corresponding function (rectangle turns from green to blue)
- press "RESET" to have the software control the status of the corresponding function

NOTE: To cancel changes made in this page and restore the default values, all you have to do is cut power to the multiplexed system by turning the ignition key off.

NOTE: To go from a module to another (e.g. from module 10 to 20), the operator has to go back to the Module I/O Status page (see Figure 9-8) and select module 20.

Press "Esc" to return to the preceding page.

Joystick

The joystick page is accessible from the Module I/O Status page (see Figure 9-8). From that page select “Joystick” using up/down arrows and press “OK”. The Joystick page opens (see Figure 9-15).

Figure 9-15 Joystick page



The Joystick page allows the operator to check if all functions of the joystick are working correctly. If one joystick is installed on your vehicle, it will be represented on the monitor display by joystick 127. However, if two joysticks are installed on your vehicle, any of the two joystick numbers (127 and 72) can represent either joystick on the screen.

If you press a joystick button, the corresponding button on the monitor will turn green. If nothing happens, there may be a communication problem between the joystick and the master control module. Refer to the maintenance personnel or Labrie*Plus*.

Also, if you move the joystick backwards, forwards or sideways, you should see the values under the illustration changing. If no change occurs when moving the joystick, a communication problem between the joystick and the master control module may be the cause. Refer to the maintenance personnel or Labrie*Plus*.

Press “Esc” to return to the preceding page.

J1939

The J1939 page is useful when you need some specific information (e.g. current gear, road speed, brake status).

Figure 9-16 J1939 page



Your vehicle is equipped with 2 different CAN-based communication buses:

- the **J1939 bus**, which is used for the chassis equipment; and
- the **CANopen bus**, which is used for the body.

These 2 communication buses are completely independent of one another, except for some specific data that are transferred from the chassis J1939 bus to Labrie's multiplex system in which they will be used. These specific data are the following:

- selected gear
- current gear
- road speed
- engine RPM
- brake
- parking brake

Press "Esc" to return to the preceding page.

Module Software Version
On the Module Software Version page, you will find the software version currently used by each of the modules installed on the truck and by the master control module.

Figure 9-17 Software version page



With the information on this page it is possible for the operator or maintenance personnel to determine the electric schematic number pertaining to a vehicle. Looking at Figure 9-17 above you will notice the following digits 8-6-5-1 between, for example, 10 and R1. As all Labrie electric schematics begin with ZS00, you simply add 8-6-5-1 to it to find the corresponding electric schematic number. So, in this case, the electric schematic number is ZS008651.

Press "Esc" to return to the preceding page.

Pump Usage
This section contains an optional hour meter that tracks pump usage for maintenance purposes.

Press "Esc" to return to the preceding page.

Time Adjust
This section allows you to set the Time and Date indicator.

Press "Esc" to return to the preceding page.

NOTE: To go back to the Main Page or Main Menu, press "Esc" as needed until the desired page is displayed.

Warning Buzzer

Among the many buttons on the control panel you will find a warning buzzer (see Figure 9-18). This buzzer sounds and a red light in its center flashes to warn the operator of any situation that might be hazardous. When this happens, the operator can look at the monitor screen for more information on the situation. A caution or warning message will be displayed. The buzzer also sounds when the truck is in reverse or when the body is being hoisted.

Figure 9-18 Buzzer with red light in its center



Plugging a Computer

The control panel has a computer plug on it that can be used to connect a computer for reprogramming purposes (see Figure 9-19). In order to connect a computer to this plug, special hardware and software are required (included in a service kit). For more information on this, contact the Labrie*Plus* Service Department. In advanced troubleshooting process, a modem may be connected to this plug to help Labrie's technicians to pinpoint the cause of problems with body functions.

Figure 9-19 Computer plug



Replacing the CAN Bus-Based Multiplex Joystick

Should the CAN bus-based multiplex joystick need to be replaced for any reason, it will have to be replaced with a new joystick of the same kind and same part number in order to insure continued proper operation of the multiplex system. Do not use other kind of joysticks even if they bear similarities to the CAN bus-based joystick. For more information on CAN bus-based joystick replacement, contact Labrie*Plus*.

Figure 9-20 CAN bus-based multiplex joystick



NOTE: The PTO can only be turned on when the engine speed is lower than 900 rpm and the air pressure higher than 90 psi. It is recommended to raise the engine speed only after the hydraulic system is engaged.

Labrie's multiplex system monitors all safety and operating functions to insure they work at their best. This system transfers data to and from Allison transmission ECU and Cummins engine ECM. In order for this to be possible, proper parameters must be put into these ECU and ECM. In the next section you will find tables that contain such parameters.

Allison Transmission Parameters

In Allison transmissions used on automated vehicles, the electronic control unit (ECU) manages several functions:

- It prevents the pump from over speeding (2000 rpm, maximum).
- It prevents the pump from engaging if the engine speed is higher than 900 rpm.
- It also controls the auto-neutral system (if present).

Programmation of the ECU can be done using the Allison Doc software installed on a laptop computer. Allison Doc is also necessary to verify if signals are properly reaching the ECU, and to verify the fault code.

Figure 9-21 Allison Doc software



If the ECU of your vehicle requires repair or replacement, or if it needs specific programming parameters, see *Programmed Parameters* below.

Programmed Parameters

Programming in the transmission ECU module affects engine speed, PTO engagement and operation, as well as the (optional) auto-neutral system. If the ECU module is replaced, it must be reprogrammed to reset the vehicle operating parameters. Refer to Table 5 to reprogram the transmission ECU.

On chassis supplied by Labrie, the programming package for Allison transmissions is package #142. Some customer chassis may have different programming packages. Refer to your local Allison dealer for original programming packages. For further information regarding ECU programming, contact Labrie*Plus*.

The following pages show how Allison electronic transmission ECUs are programmed for Labrie vehicles. Parameters shown in the following tables apply to all AUTOMIZER™ vehicles.

Table 5 Allison transmission programmed parameters

Parameters	r.p.m.
Maximum engine speed for PTO engagement	900
Maximum engine speed for PTO operation	2000
Maximum output speed for PTO engagement	5000
Maximum output speed for PTO operation	930[a] (15 mph)
Maximum output speed for auto-neutral	500 (7 mph)

a. The value is adjusted so it corresponds with the vehicle speed in mph. It may vary according to the differential gear ratio and tire size.

Table 6 **Allison wires to be enabled**

Wires	Wire # (WTEC IV)
Pack enable	117
Input PTO enable	143
Output PTO enable	130
Output neutral indicator – PTO	145
Auto-neutral pack enable (if present)	142

To tap into the ECU, Labrie uses the following wires on the Allison connector:

Table 7 **Input**

Wire #	Description	State
117	Pump pack enable	Active when the brakes are used, and when the PTO and auto-neutral switches are ON (ground signal).
143	PTO enable	Active when the PTO switch is ON (+12-V signal).
142	Auto-neutral pack input	Active when the brakes are used, and when the PTO and auto-neutral switches are ON (ground signal).

Table 8 **Output**

Wire #	Description	State
130	PTO enable output	Active when the PTO switch is ON and when all engine and vehicle speed criteria are respected (+12-V signal). See *Programmed Parameters* on page 206.
145	Neutral signal output	Active when the transmission is in neutral. This signal (ground signal) is used to allow the fast idle engagement. For more details, refer to the electrical schematic provided with the vehicle.

Cummins Engine Parameters

The following table contains the engine programming parameters specific to the AUTOMIZER™ units. Enter those parameters into Cummins engine ECMs. For more information, call Labrie*Plus*.

Table 9 Cummins engine parameters

Menu: Features & Parameters	Parameter Name	Value
Adjustable low idle speed	Low idle speed adjustment switch	Disable
	Low idle speed	700 rpm
Switched maximum engine operating speed	Switched maximum engine operating speed	Enable
	Maximum operating speed switch setup	Active closed
	Maximum switched engine speed	900 rpm

10

Lifting Arms

To keep the arm in good working order and to reduce the amount of down time and the risk of accidents, a preventive maintenance program must be implemented and followed thoroughly.

Maintenance personnel must be familiar with the operation of the arm, the safety around it and the maintenance procedures described in this chapter.

Daily Inspection

Danger!

Always lock out and tag out the vehicle when inspecting or performing maintenance on it (see *Locking Out and Tagging Out the Vehicle* on page 12)

On a daily basis, perform a visual inspection of the arm, looking for leaks, cracks or premature wear of the moving parts. For detailed information on greasing points, see *Lubrication* on page 99.

To perform the daily inspection:

1. Start the engine and engage the hydraulic pump (pump switch ON).
2. Fully extend the arm.

Danger!

Do not stand directly in the path of the arm while performing the inspection.

3. Turn off the hydraulic pump and the engine.
4. Perform a visual inspection of the following items:

Figure 10-1 Mounting bolts

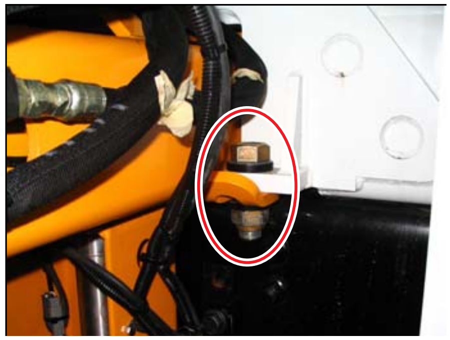


Figure 10-2 Rollers and bearings

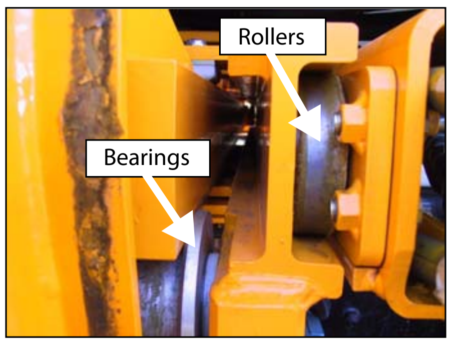


Figure 10-3 Bolt locks



Figure 10-4 Right Hand™ gripper

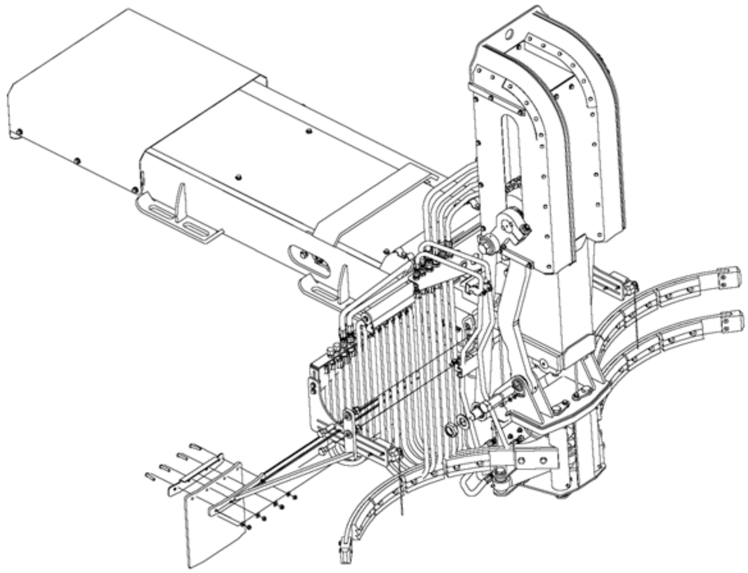
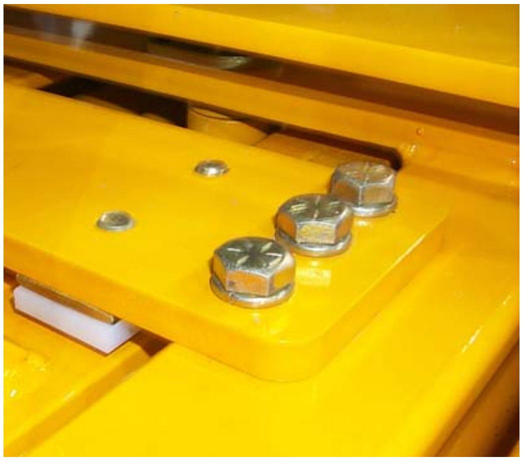


Figure 10-5 Hoses and connections



5. Check for loose nuts and bolts.

Figure 10-6 Bolts





6. Check both arm stowed limit switches.

   For more information, see *Adjusting Arm Stowed Limit Switches (2)* on page 90.

7. Lubricate arm moving parts as per the arm lubrication chart on page 228.
8. Lock out and tag out the vehicle (see *Locking Out and Tagging Out the Vehicle* on page 12).

Gripper Auto-Closing System

Lifting arms are equipped with a system that automatically closes the gripper if the operator forgot to close it. The system automatically closes the gripper at a preset height, preventing collision between the gripper and the hopper wall.

Also, if the vehicle is parked for a long period of time with the gripper inside the hopper, the gripper cylinder may leak pressure, causing the gripper to open by itself. As soon as the hydraulic system is brought online (pump switch ON), the system closes the gripper automatically before the operator can move the arm.

For this to work, the system acts as though the operator would push the CLOSE GRIPPER button on the joystick.

The “auto-closing system” is activated by a limit switch located on the side of the arm. When the gripper passes the auto-closing limit switch, a signal is sent to the ON/OFF valve coil to close the gripper.

Figure 10-7 Auto-closing limit switch (lower) and camera switching limit switch



Figure 10-8 Gripper closed (left) and open (right)



Inspecting the Auto-Closing System

Danger!

Always lock out and tag out the vehicle when inspecting or performing maintenance on the vehicle (see *Locking Out and Tagging Out the Vehicle* on page 12).

To inspect the system:

1. Make sure that the vehicle is parked on safe, level ground.
2. Secure the area around the path of the arm with barrier tape or barricades.
3. Start the engine and engage the hydraulic pump.

4. Lower and fully open the gripper.

Danger! Do not stand directly in the path of the arm while carrying out this inspection.

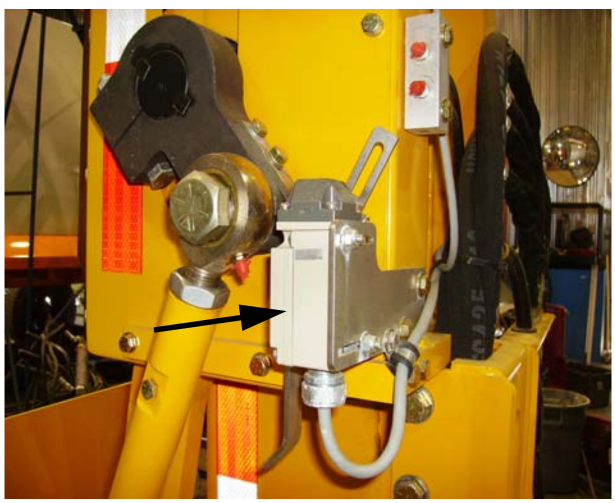
5. Close the gripper a few inches (to release the limit switch) and lift the gripper to see if it closes automatically.

   If the gripper does not close on its way up, refer to the following section.

Adjusting the Auto-Closing System

The gripper auto-closing system is controlled by a limit switch located on the side of the arm.

Figure 10-9 Auto-closing limit switch



To adjust the auto-closing system:

1. Make sure that the vehicle is parked on safe, level ground.
2. Secure the area around the path of the arm with barrier tape or barricades.
3. Start the engine and engage the hydraulic pump.
4. Lower and fully open the gripper.

Danger! Do not stand directly in the path of the arm while carrying out these adjustments.

5. Raise the gripper (or the arm) until the target (flat bar) releases the limit switch. At this point, a 12-volt signal should reach the coil on the ON/OFF valve to close the gripper.

- If the gripper does not close while raising the arm, the limit switch is not properly adjusted.

  In that case, completely lower the gripper and adjust the limit switch so that it clicks as soon as the target is detected.

6. Perform a few up-and-down cycles of the gripper.

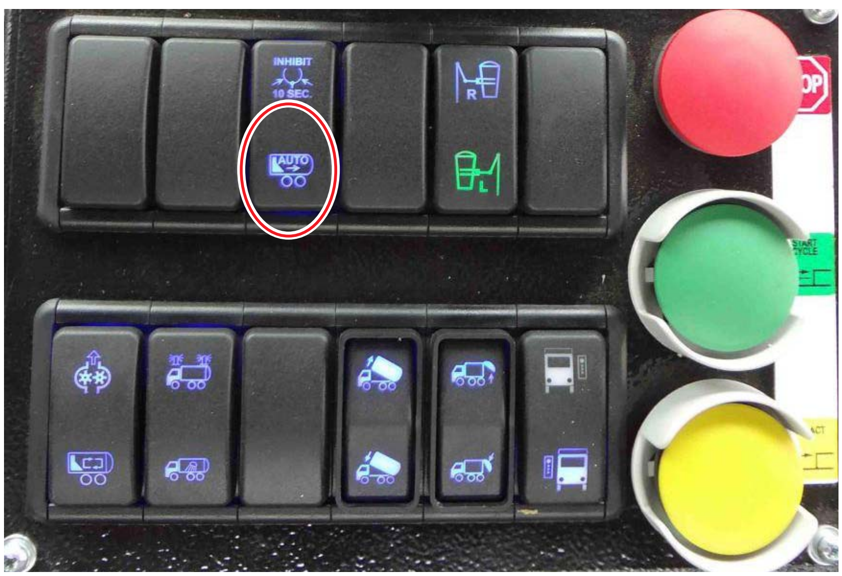
Each time on its way up to the top, the gripper should close automatically in order not to hit the vehicle.

IMPORTANT: If the system does not work properly, it may be necessary to replace the limit switch.

Auto-Packing

The Auto-Packing switch (see Figure 10-10) enables the packer to automatically start cycling about 2 seconds after the gripper reached the mid-height position on its way up. If the packer is performing a cycle while the lifting arm carries a rolling cart towards the hopper, the packer will immediately stop and return to its home position, no matter where it was in the hopper. This is to prevent refuse from falling directly on the packer. However, there is one exception to this: if, after 3 consecutive packing cycles, the packer fully extend proximity switch has not been activated, the packer will not return to its home position.

Figure 10-10 Auto-Packing switch



NOTE: For co-mingle units, the packer does not automatically return to its home position during auto-packing because the hopper is too small due to the presence of a chute inside the hopper.

When the Auto-Packing feature is used simultaneously with the Multi-Cycle feature, the packer will then perform a preset number of cycles unless a new rolling cart is carried towards the hopper by the automated arm. In such a case, the Multi-Cycle feature will then be reset to zero.

When a packing cycle has been interrupted and the packer has returned to its home position, a new cycle will begin 2 seconds after the gripper reached the mid-height position on its way up.

Right Hand™ Arm Chain Tension and Gripper Position

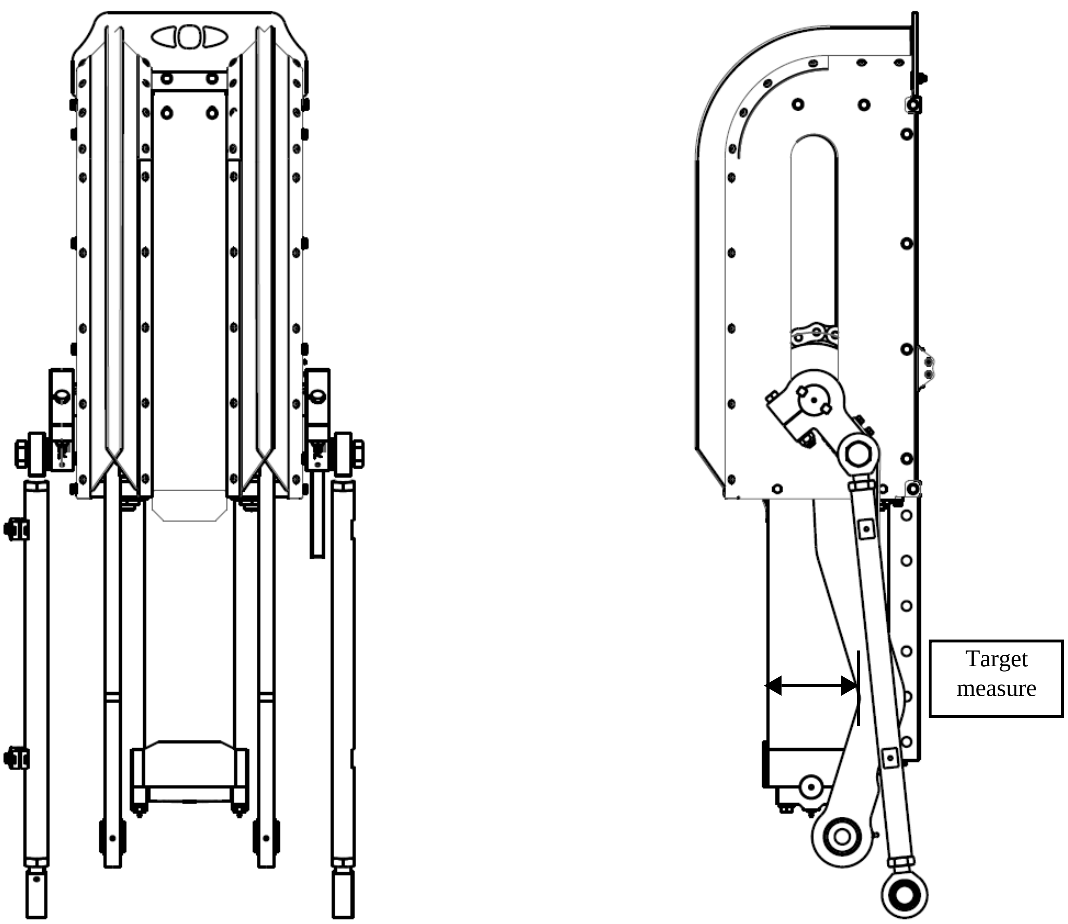
Proper chain tension is essential for smooth operation of the standard or HD Right Hand™ arm on AUTOMIZER™ vehicles.

To adjust chain tension and gripper position:

1. Lower the gripper to its lowest position.
2. Measure between the edge of the gripper links on each side and the front of the arm main frame (see Figure 10-11).

   This measurement should be as close as possible to the targeted value shown in the table below (next page), but more importantly, it should be the same on each side.

Figure 10-11 Target measure



3. Check the upper chains for any slack. Adjust the chains if necessary. To do so:

   3 a. Fully retract the arm. Remove the access cover using a ½" socket.

   3 b. On Right Hand™ arm model, remove the nut retainers at all 4 adjustment positions. On Right Hand HD™ arm model, there are no nut retainers. Loosen all adjustment nuts using a1-½" socket. DO NOT remove the nuts.

3 c. Both arms should be in contact with the bumpers installed on the end of the rail. If badly worn, replace both bumpers.

3 d. Tighten both top adjustment nuts until you achieve the target measurement at the link arms.

Arm Model	Target Measure
Right Hand™	6-1/4”
Right Hand HD™	6-9/16”

It is normal that the link arms are in contact with the bumpers; this is to ensure a stable position when the truck is moving.

3 e. Raise the gripper to its upper position. Tighten both sides of the lower adjustment nut to the target torque value.

Arm Model	Target Torque
Right Hand™	40 lbs-ft
Right Hand HD™	80 lbs-ft

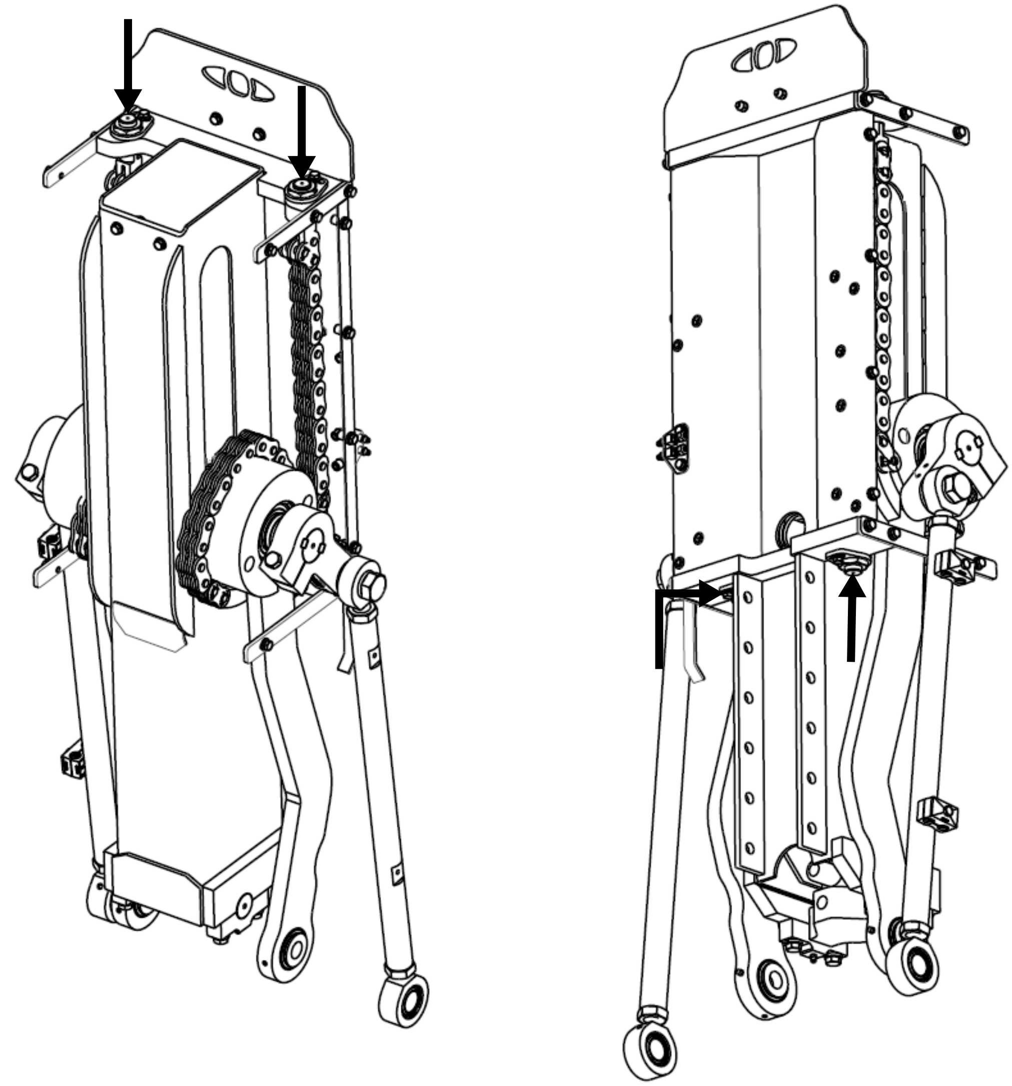
3 f. Lower the gripper to verify that the link arms are in contact with the bumpers and that the target values are still right. Operate the Right Hand™ arm or the Right Hand HD™ arm up and down to verify smooth operation.

3 g. Reinstall the nut retainers (if applicable) and all access covers.

4. Raise the gripper to its highest position.

5. Check the lower chains for any slack. Adjust the chains if necessary by following the procedure described in step 3.

Figure 10-12 Arm alignment (the location of the chain tension bolts is indicated by arrows)



NOTE: The above illustration shows a standard Right-Hand™ arm.

Bleeding Air Out of the Lifting Arm Hydraulic Circuit

When replacing a hydraulic cylinder, a holding valve, or when opening the Right Hand™ hydraulic circuit, air may enter the hoses located between the proportional valve and the arm cylinder. Because air cannot be completely removed by the normal use of the arm, the system must be bled.

The Right Hand™ arm is composed of three hydraulic subcircuits, which must be bled individually depending on the modifications done. Those subcircuits are the following:

Gripper hydraulic circuit

This subcircuit includes two cylinders (bore 1 ½ in., stroke between 5 and 7 in.) a holding valve and a flow divider valve. It controls the open/close motion of the gripper in order to grip containers.

In/Out hydraulic circuit

This subcircuit includes two cylinders (bore 1 ½ in., stroke 54 in.) and a holding valve. It controls the extend/retract motion of the arm in order to reach containers and come back close to the truck for travelling.

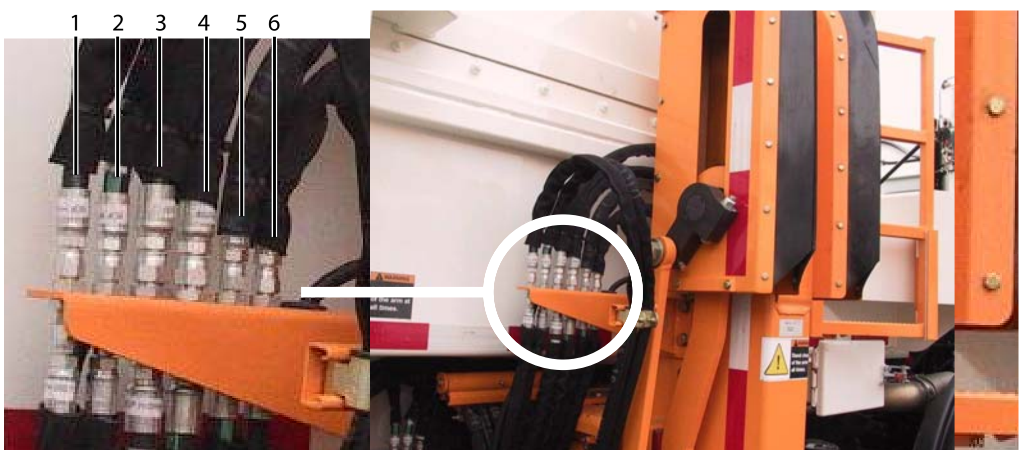
Up/Down hydraulic circuit

This subcircuit includes one cylinder (bore 3 in., stroke 15 ¾ in.) and a holding valve. It controls the lift/lower motion of the arm in order to empty the container in the hopper and bring it back down.

To bleed the gripper circuit:

1. Apply all safety measures to ensure safety around the vehicle at all times and make sure to have enough room to fully operate the arm and gripper.
2. Make sure that the parking brake is applied.
3. Park the arm against the hopper wall, move the gripper to lower position and fully open the gripper.
4. Loosen (*do not disconnect*) fitting number 2 (see Figure 10-13).

Figure 10-13 Fittings to loosen



5. Using the joystick or the lever on the proportional valve, fully extend the gripper cylinders in order to close the fingers.
6. As soon as a constant and uniform oil flow (without air bubbles) is leaking out, tighten the fitting. Keep the hydraulic function engaged until the fitting is tightened.
7. Loosen (*do not disconnect*) fitting number 1.
8. Fully retract the gripper cylinders in order to open the fingers.
9. Repeat step number 6.

To bleed the In/Out circuit:

1. Repeat steps 1 through 3 of the gripper circuit bleeding procedure on page 219.
2. Loosen (*do not disconnect*) fitting number 3 (see Figure 10-13).

3. Using the joystick or the lever on the proportional valve, fully extend the rail cylinders of the arm.
4. As soon as a constant and uniform oil flow (without air bubbles) is leaking out, tighten the fitting. Keep the hydraulic function engaged until the fitting is tightened.
5. Loosen (*do not disconnect*) fitting number 4.
6. Fully retract the rail cylinders of the arm.
7. Repeat step number 4.

To bleed the Up/Down circuit:

1. Repeat steps 1 through 3 of the gripper circuit bleeding procedure on page 219.
2. Loosen (*do not disconnect*) fitting number 5 (see Figure 10-13).
3. Using the joystick or the lever on the proportional valve, fully extend the lifting cylinder of the arm.
4. As soon as a constant and uniform oil flow (without air bubbles) is leaking out, tighten the fitting. Keep the hydraulic function engaged until the fitting is tightened.
5. Loosen (*do not disconnect*) fitting number 6.
6. Fully retract the lifting cylinder of the arm.
7. Repeat step number 4.

Lifting Arm Holding Valves

The Right Hand™ lifting arm is equipped with cylinder-mounted holding valves. See the table below for the various characteristics of the lifting arm holding valves for each arm type.

Arm Type	Movement	Type of Movement Prevented	Cushioning Effect
Std & HD	In/Out	Cylinder Opening (boom Extension)	In - Adjustable Out - non adjustable
HD only	Up Down	Cylinder Closing (gripper body lowering)	Up/Down - Adjustable
Std & HD	Gripper	Cylinder Opening (gripper closure)	None

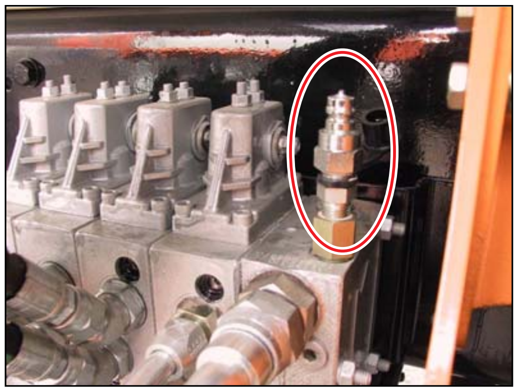
Adjusting Gripper Holding Valve Pressure

NOTE: The lifting arm gripper is equipped with holding valves. 2 cartridges are located just behind the gripper (see Figure 10-15) [for the standard Right Hand™]. For the HD Right Hand™, cartridges are mounted directly on the cylinders (see Figure 10-16).

To adjust the gripper holding valve pressure:

1. Apply all safety measures to ensure safety around the vehicle at all times.
2. Make sure that the parking brake is applied.
3. Locate the gripper holding valves (see Figure 10-15 [standard arm], or Figure 10-16 [HD arm]).
4. Connect a pressure gauge to the automated arm valve.

Figure 10-14 Quick coupler for pressure gauge



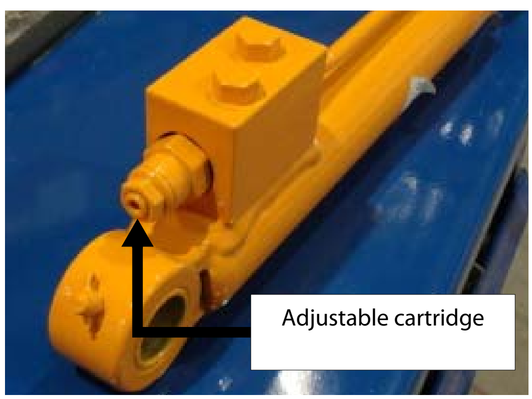
5. Start the engine and engage the hydraulic pump.
6. Using the pressure gauge on the automated arm valve, adjust the opening pressure of each of the gripper closing movement cartridges to 550 psi.

NOTE: Pressure reading must be done independently for each side of the gripper (single/dual finger side). To do so, place one of the gripper cylinders in fully extended position and activate the lever on the automated arm valve to initiate the closing movement of the other cylinder. Proceed vice-versa for the other side of the gripper.

Figure 10-15 96-gal gripper holding valve



Figure 10-16 Cylinder-mounted holding valve (HD arm gripper)



Adjusting In/Out Holding Valve Pressure

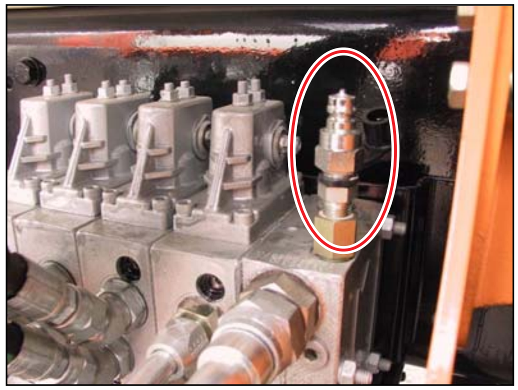
NOTE: There is a holding valve mounted on the in/out cylinder (standard and HD).

To adjust the in/out holding valve pressure:

1. Apply all safety measures to ensure safety around the vehicle at all times.
2. Make sure that the parking brake is applied.

3. Locate the holding valve on the in/out cylinder (see Figure 10-18).
4. Connect a pressure gauge to the automated arm valve.

Figure 10-17 Quick coupler for pressure gauge

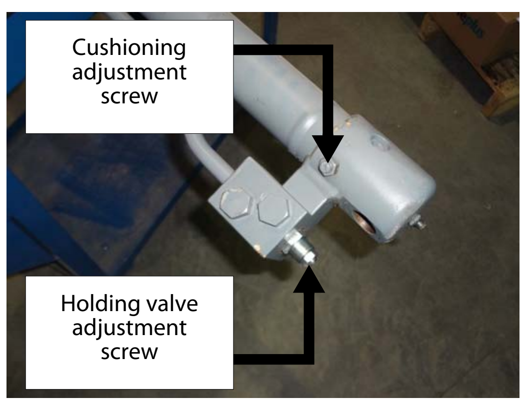


5. Start the engine and engage the hydraulic pump.
6. Using a lever on the valve, manually extend the Right Hand™ arm gradually.
7. If the gauge does not indicate a pressure of about 650 psi when the automated arm starts extending, adjust the in/out holding valve adjustment screw to set the pressure properly.

NOTE: Turn the screw counter-clockwise to increase pressure or clockwise to reduce pressure.

NOTE: This pressure value of 650 psi is a reference value; it could be more or less. It all depends on how much pressure the in/out holding valve needs to resist to an arm slide pull force of at least 1600 lbs up to a maximum of 1900 lbs, at which time the valve must open.

Figure 10-18 Holding valve adjustment screw (in/out cylinder)



NOTE: If the cushioning effect on the retraction stroke needs to be adjusted, simply turn the cushioning adjustment screw accordingly: clockwise to increase cushioning effect; counter-clockwise to reduce it. The cushioning effect on the extension stroke cannot be adjusted.

Adjusting Up/Down Holding Valve Pressure

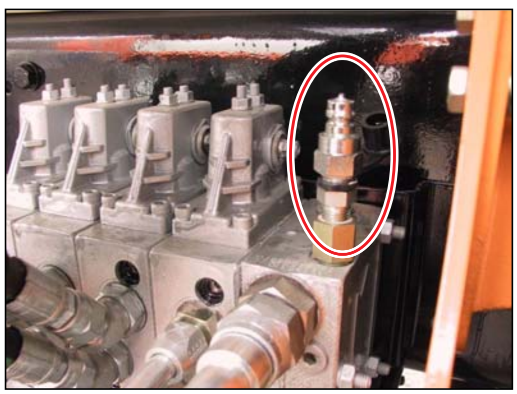
NOTE: The up/down cylinder on a standard lifting arm has no holding valve on it. However, it has a pressure relief cartridge that provides stroke-end cushioning during extension of the cylinder. The up/down cylinder on a HD lifting arm is fitted with a holding valve as well as a cushioning adjustment screw which is used to adjust the stroke-end cushioning during extension/ retraction of the cylinder.

NOTE: If the cushioning effect needs to be adjusted, simply turn the cushioning adjustment screw accordingly: clockwise to increase cushioning effect; counter-clockwise to reduce it.

To adjust the up/down holding valve pressure:

1. Apply all safety measures to ensure safety around the vehicle at all times.
2. Make sure that the parking brake is applied.
3. Locate the holding valve on the up/down cylinder (see Figure 10-20).
4. Connect a pressure gauge to the automated arm valve.

Figure 10-19 Quick coupler for pressure gauge

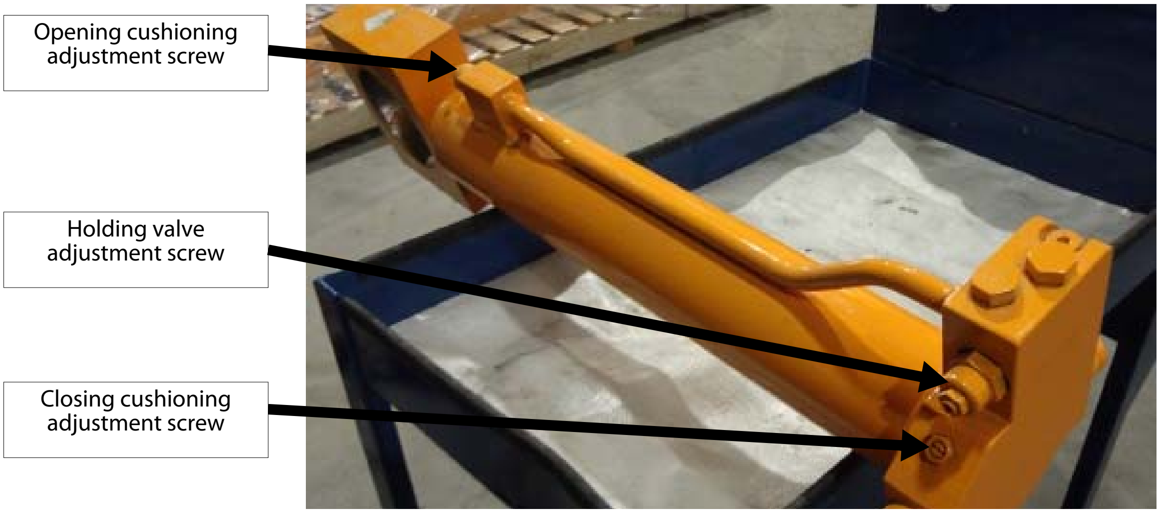


5. Start the engine and engage the hydraulic pump.
6. Using a lever on the valve, manually raise the Right Hand™ arm gradually.
7. If the gauge does not indicate a pressure of about 700 psi when the automated arm starts going down, adjust the up/down holding valve adjustment screw to set the pressure properly.

NOTE: Turn the screw counter-clockwise to increase pressure or clockwise to reduce pressure.

NOTE: This pressure value of 700 psi is a reference value; it could be more or less. It all depends on how much pressure the up/down holding valve needs to resist to a downward pulling force of at least 1000 lbs.

Figure 10-20 Holding valve adjustment screw (up/down cylinder) - HD arm



IMPORTANT: Cushioning cartridges on up/down cylinder (see Figure 10-20) should be torqued to 28 ft-lb.

Adjusting the Arm Vane Pump Relief Valve

Usually, there is no arm vane pump relief valve on an AUTOMIZER™. However, if your AUTOMIZER™ vehicle is equipped with such a valve, it would be located on the front of the pump.

Tighten the relief valve completely on the pump.

The arm (retract/extend) and gripper (up/down movement) operating pressure is the same as the main relief[1]. Table 1 lists the operating pressure and cycle times for each arm function. No adjustments are required for these functions. Only "gripper close" requires proper adjustment to prevent crushing roller carts. See *Adjusting Arm Speed* on page 226 to adjust the gripper load sense relief valve.

For more information, see *Adjusting Pressure on the Proportional Valve* on page 143.

Table 1 Arm operating pressure and cycle times

Arm function	Pressure setting (psi)	Cycle time (sec.)
Extension/retraction	2000 (96 gallons, std & HD) 2700 (300 gallons/1100 L)	3.25/3 (all models)
Gripper up	2000 (96 gallons, standard) 2000 (96 gallons, HD) 2700 (300 gallons/1100 L)	3 (96 gallons, std & HD) 3.6 (300 gallons, std & HD)

1. If the arm is equipped with a 300-gallon/1100-L gripper, the up/down and extend/retract movements are set to 2700 psi.

Table 1 Arm operating pressure and cycle times (Continued)

Arm function	Pressure setting (psi)	Cycle time (sec.)
Gripper down	2000 (96 gallons, std & HD) 2700 (300 gallons, HD)	2.5 (all models)
Gripper close	1200 (96 gallons, std & HD) 1200/1800 (300 gallons, HD)	1.5 (96 gallons, std & HD) 2.25 (300 gallons, HD)
Gripper open	1200 (96 gallons, std & HD) 1200 (300 gallons, HD)	1.5 (96 gallons, std & HD) 2.5 (300 gallons, HD)

Adjusting Arm Speed

NOTE: No arm speed adjustment is required unless replacing the valve or one of its sections.

Arm speed is controlled by the amount of hydraulic fluid (flow) that is being sent to the arm cylinder. The arm control valve spools can limit the flow of hydraulic oil, depending on the section of the valve[1]. Flow is limited by two movement restrictors located on each section.

Figure 10-21 Movement restrictor



Danger! Do not stand in the path of the arm while carrying out these adjustments.

To adjust arm speed:

1. Lock out and tag out the vehicle (see *Locking Out and Tagging Out the Vehicle* on page 12).

1. Limiting spool strokes limits the quantity of oil (flow) going through them. Controlling the flow of oil means controlling arm speed.

2. Secure the area around the path of the arm with barrier tape or barricades.
3. Put the transmission in Neutral, start the engine, and engage the hydraulic pump.
4. Clearly identify the stopper screw on the valve that relates to the proper function (boom extension/retraction, gripper open/close).
5. Move the lever to evaluate arm speed, then release it.
6. Loosen the locknut.
7. Turn the restrictor adjustment screw only one eighth (1/8th) of a turn at a time to clearly feel a significant change in the arm speed.
8. Move the lever again to evaluate arm speed. Repeat until cycle times are properly set (see *Arm operating pressure and cycle times* on page 225).
9. Tighten back the locknut.

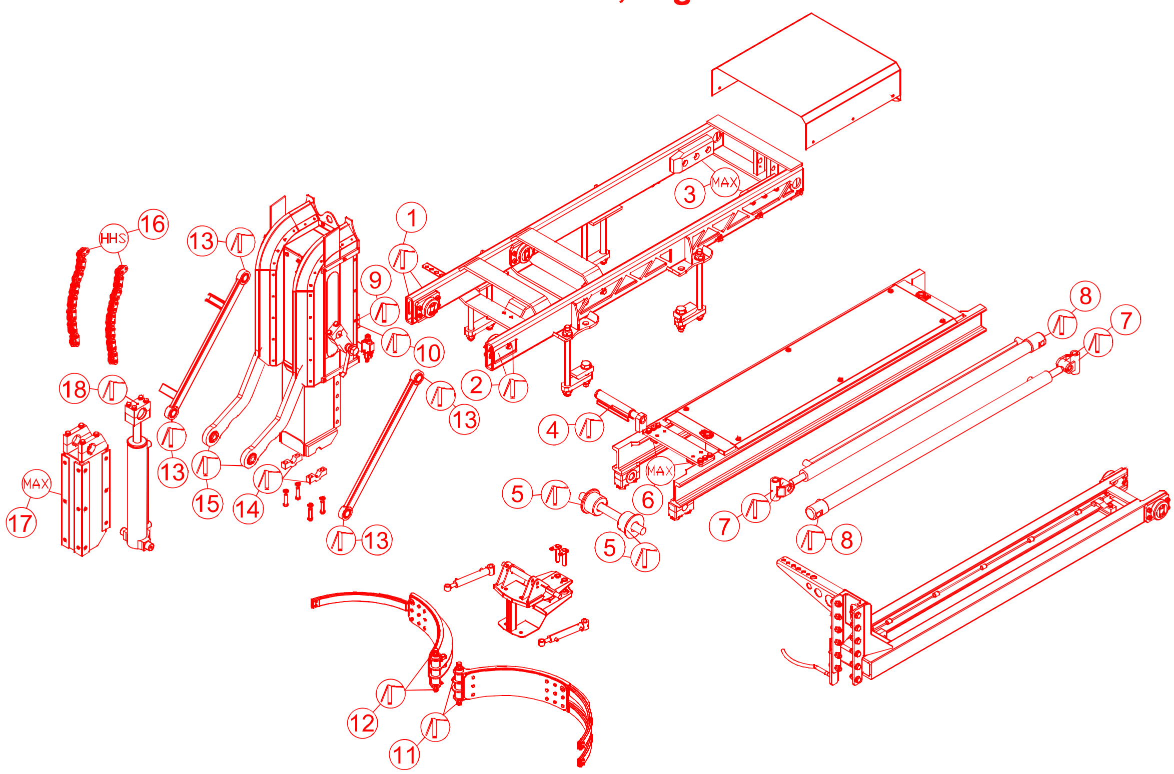
Lubrication Charts and Hydraulic Schematics

The following are examples of lubrication charts and hydraulic schematics for the RIGHT HAND™ lifting arm. Please note that these documents are for reference purposes only. The lubrication charts are based on a 40-hour a week truck operation.

Right Hand™ Lubrication Charts

Figure 10-22 Arm w/ 300-gallon gripper

LUBRICATION CHART, Right-Hand™ ARM

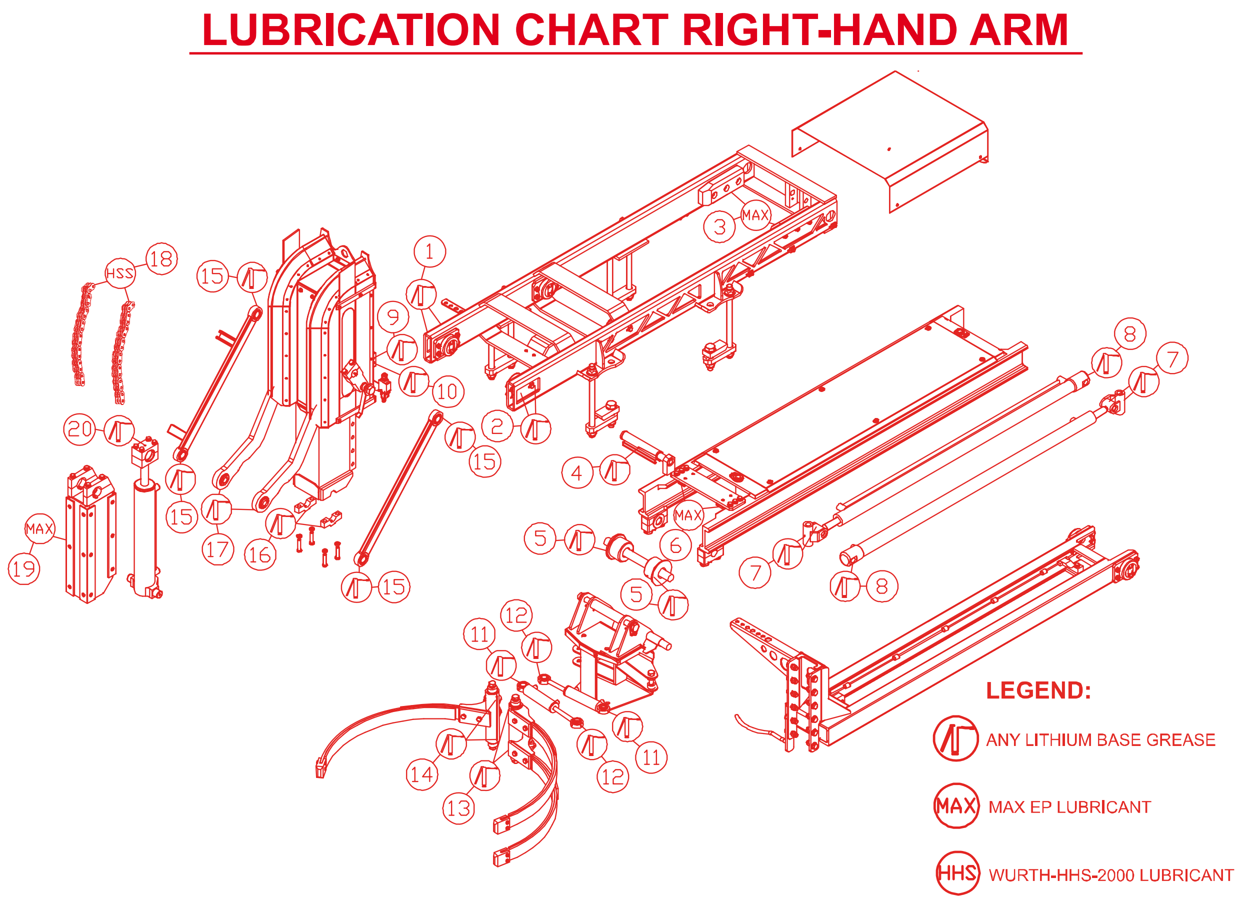


LUBRICATION CHART		
	DESCRIPTION	FREQUENCY
1	LEFT OUTTER RAIL ROLLER BEARING	WEEKLY
2	RIGHT OUTTER RAIL ROLLER BEARING	WEEKLY
3	OUTTER RAIL TEFLON GUIDE **(MAX EP)**	WEEKLY
4	CENTER RAIL HOSE HOLDER	MONTHLY
5	CENTRAL RAIL ROLLER BEARING	WEEKLY
6	CENTRAL RAIL TEFLON GUIDE **(MAX EP)**	WEEKLY
7	IN/OUT CYLINDER ROD END	WEEKLY
8	IN/OUT CYLINDER BUSHING	WEEKLY
9	LEFT INNER RAIL ROLLER BEARING	WEEKLY
10	RIGHT INNER RAIL ROLLER BEARING	WEEKLY
11	GRIPPER RIGHT BLADE PIVOT	WEEKLY
12	GRIPPER LEFT BLADE PIVOT	WEEKLY
13	GRIPPER LEVELING BARS	WEEKLY
14	OUTTER POST BOTTOM PLATES	WEEKLY
15	GRIPPER UP/DOWN ARM	WEEKLY
16	LOAD CHAIN **(WURTH-HHS-2000)**	WEEKLY
17	INNER POST TEFLON PLATE **(MAX EP)**	WEEKLY
18	UP/DOWN CYLINDER ROD END	WEEKLY
USE ALL PURPOSE COMMERCIAL LITHIUM BASE GREASE. NEVER APPLY GREASE ON THE WEAR PLATES; USE MAX EP LUBRICANT OR DISH WASHING SOAP.		

LEGEND:

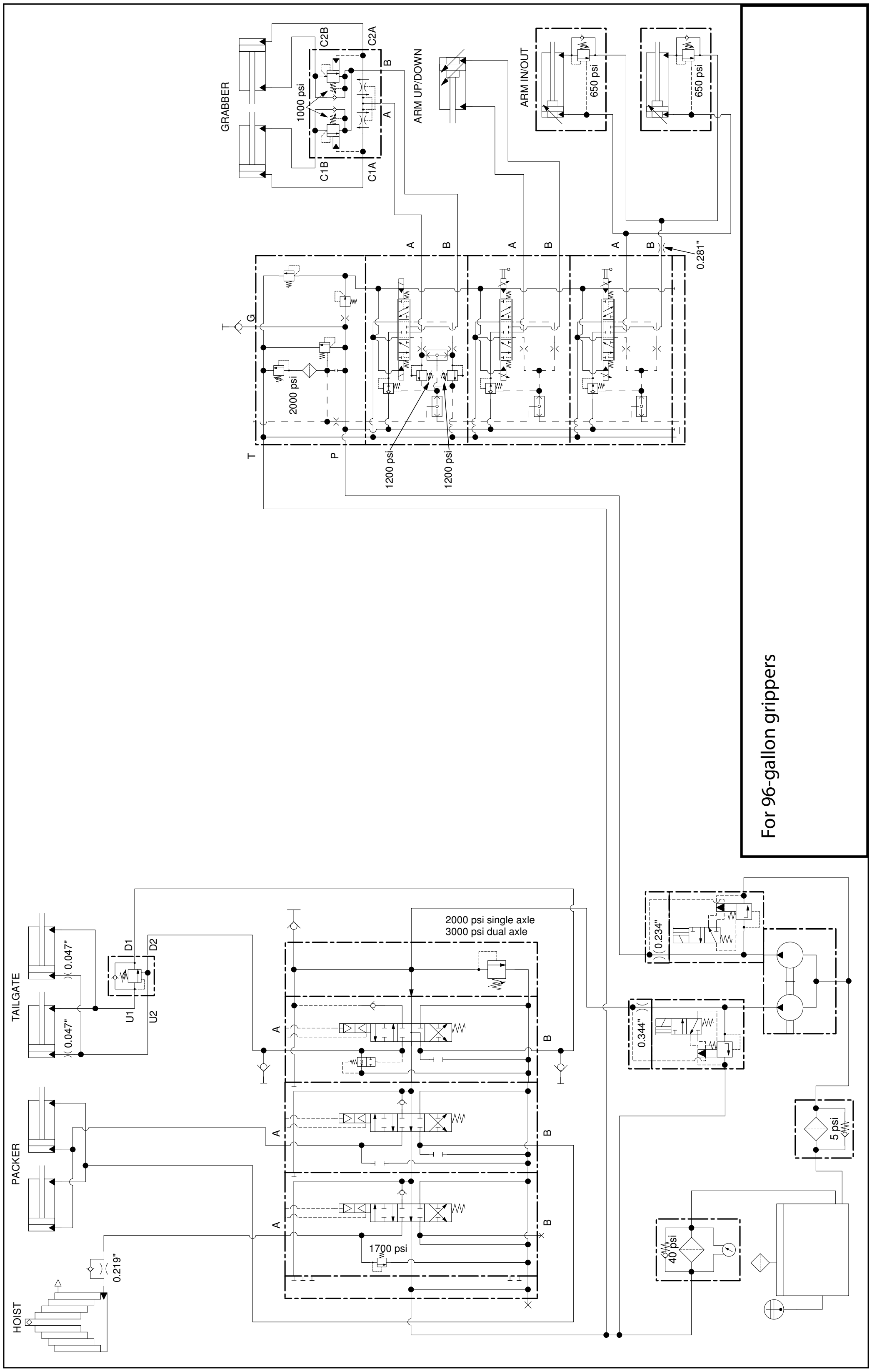
- ANY LITHIUM BASE GREASE
- MAX — MAX EP LUBRICANT
- HHS — WURTH-HHS-2000 LUBRICANT

Figure 10-23 Arm w/ 96-gallon gripper

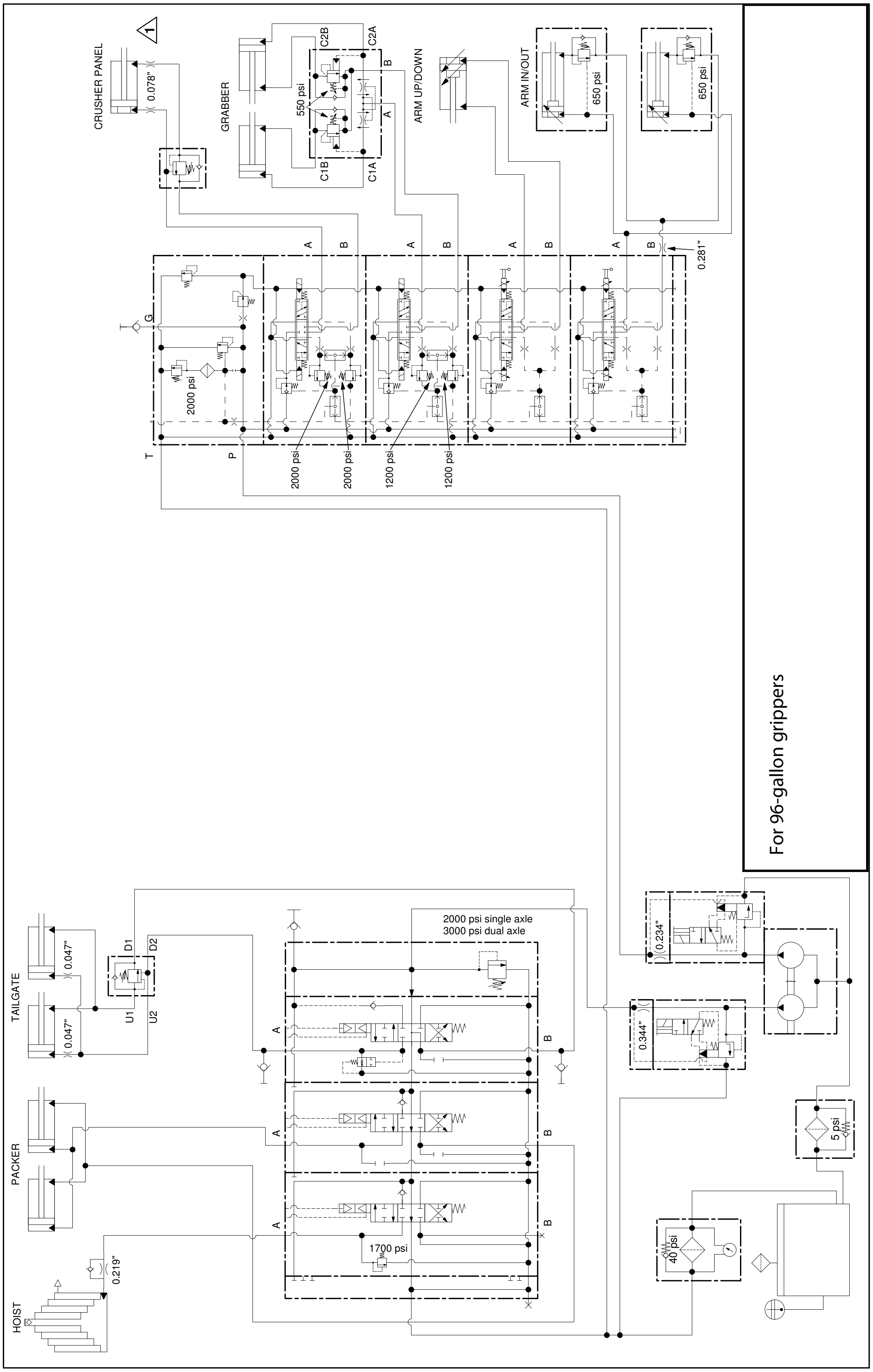


LUBRICATION CHART*		
NO.	DESCRIPTION	FREQUENCY
1	LEFT OUTTER RAIL ROLLER BEARING	WEEKLY
2	RIGHT OUTTER RAIL ROLLER BEARING	WEEKLY
3	OUTTER RAIL TEFLON GUIDE (MAX EP)	WEEKLY
4	CENTER RAIL HOSE HOLDER	MONTHLY
5	CENTRAL RAIL ROLLER BEARING	WEEKLY
6	CENTRAL RAIL TEFLON GUIDE (MAX EP)	WEEKLY
7	IN / OUT CYLINDER ROD END	WEEKLY
8	IN / OUT CYLINDER BUSHING	WEEKLY
9	LEFT INNER RAIL ROLLER BEARING	WEEKLY
10	RIGHT INNER RAIL ROLLER BEARING	WEEKLY
11	GRIPPER CYLINDER BUSHING	WEEKLY
12	GRIPPER CYLINDER ROD END	WEEKLY
13	GRIPPER RIGHT BLADE PIVOT	WEEKLY
14	GRIPPER LEFT BLADE PIVOT	WEEKLY
15	GRIPPER LEVELING BARS	WEEKLY
16	OUTTER POST BOTTOM PLATES	WEEKLY
17	GRIPPER UP / DWON ARM	WEEKLY
18	LOAD CHAIN (WURTH-HHS-2000)	WEEKLY
19	INNER POST TEFLON PLATE (MAX EP)	WEEKLY
20	UP / DOWN CYLINDER ROD END	WEEKLY
USE ALL PURPOSE COMMERCIAL LITHIUM BASE GREASE. NEVER APPLY GREASE ON THE WEAR PLATES; USE MAX EP LUBRICANT OR DISH WASHING SOAP.		

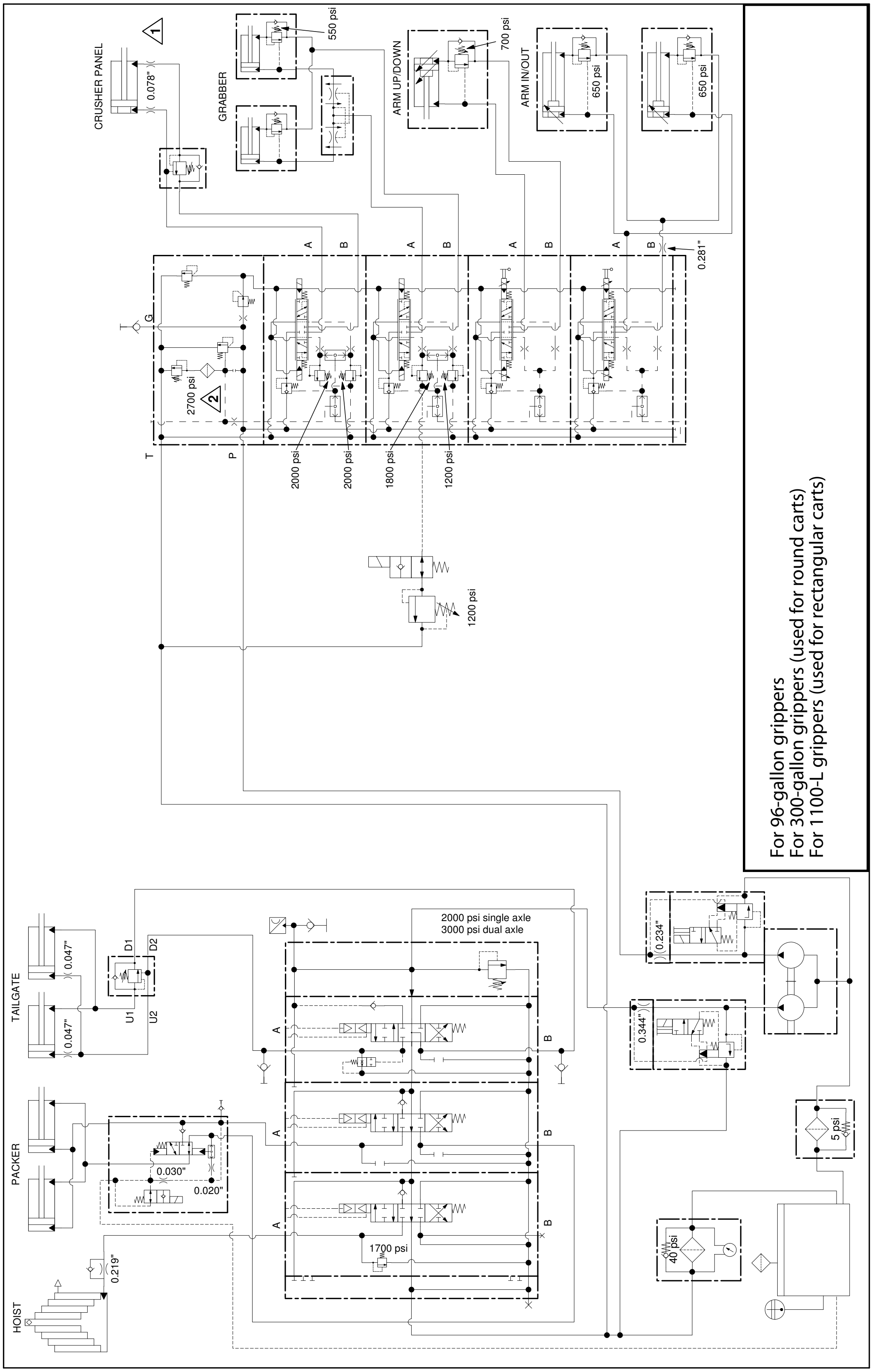
Hydraulic Schematic (Standard Arm)



Valve with Crusher Panel Section (Standard Arm)



Valve with Crusher Panel Section (Heavy-Duty Arm)



Our office in the U.S.

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(24 hours)

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Part# 177542 (rev. 0)

CERTIFIED BNQ ISO 9001:2008 SYSTEM